

# ACRIN6666 trial

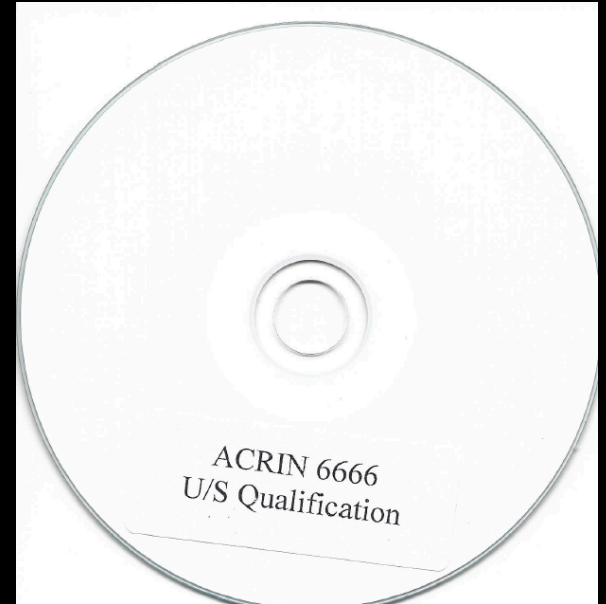
## 70 Breast US training cases

ACRIN-American College of Radiology  
Imaging Network  
Courtesy of Dr Wendie Berg  
Magee Women's Hospital of UPMC,  
University of Pittsburgh School of Medicine

- The following are 'screen shots' of the summary page for each case of the 70 case breast ultrasound interactive training quiz that all ACRIN sonographers & physicians had to perform prior to participating in the multi-center ACR trial of 2662 pts evaluating screening ultrasound
- The following is intended only for CME / training purposes

- If you would like to perform the interactive 70-question training quiz on your own (i.e. you can choose each lesion feature from a drop-down menu on your own for each case), please call TNI head office, and we can send you a CD copy of the quiz

- it is a self-installing .exe file/program
- Program is only Windows-compatible
- Instructions for taking interactive quiz  
Included at end of this document



- Keep in mind when answering quiz questions, that in general, in the U.S.A., breast lesions often are managed more aggressively than in Canada
  - Eg. some of the lesions that have a final category assessment of BI-RADS4a (low suspicion) in this training quiz may receive a slightly less aggressive assessment score of BI-RADS3 (probably benign) in Canada, etc
  - (in the U.S.A., pts are screened on a more frequent interval and beginning at an earlier age)
    - USA: ACR & ACS recommend mammography screening starts at age 40 annually
    - OBSP in Canada: mammo screening starts at age 50 q2 years



- For “Special Cases” and “No Mass” cases:
  - you can simply choose “special case” or “no mass” for the Shape, Margin, Orientation, Echogenicity, Posterior features sections

**Special Case**

9 - Not a special case

**Shape**

2 - Oval or Gently Lobulated

**Margins**

2 - Circumscribed

**Orientation**

2 - Parallel

**Echogenicity**

5 - Hypoechoic

**Posterior Features**

2 - None

**Calcifications**

1 - None

**Final Assessment**

3 - Probably benign

Continue, Next Case

**Case 1 of 70**

1%

Imaging

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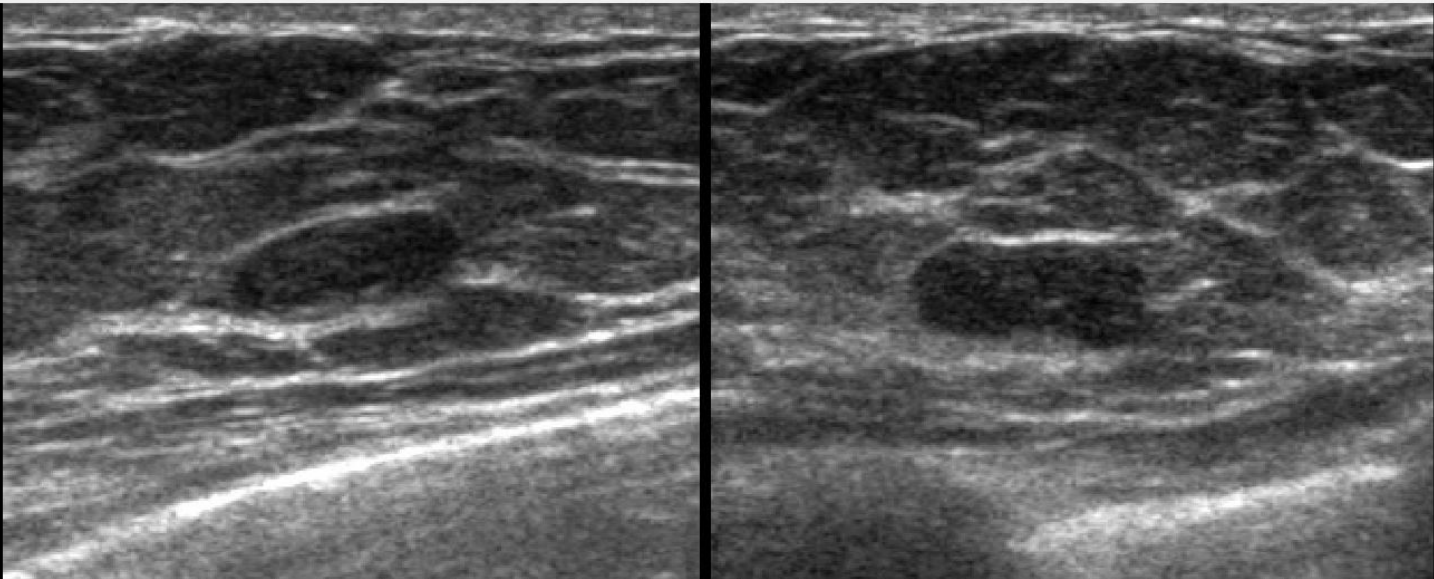
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Fit

0

Next Case

This 45 year-old woman had an 8mm nonpalpable oval, circumscribed, hypoechoic mass with no posterior features. BIRADS 3, probably benign. Core biopsy (bx) was performed because of interval growth, showing fibroadenoma (FA).



**Special Case**

2 - Cyst

**Shape**

2 - Oval or Gently Lobulated

**Margins**

2 - Circumscribed

**Orientation**

2 - Parallel

Continue, Next Case

**Echogenicity**

4 - Complex (cystic and solid)

**Posterior Features**

3 - Enhancement

**Calcifications**

1 - None

**Final Assessment**

3 - Probably benign

**Case 2 of 70**

3%

Imaging

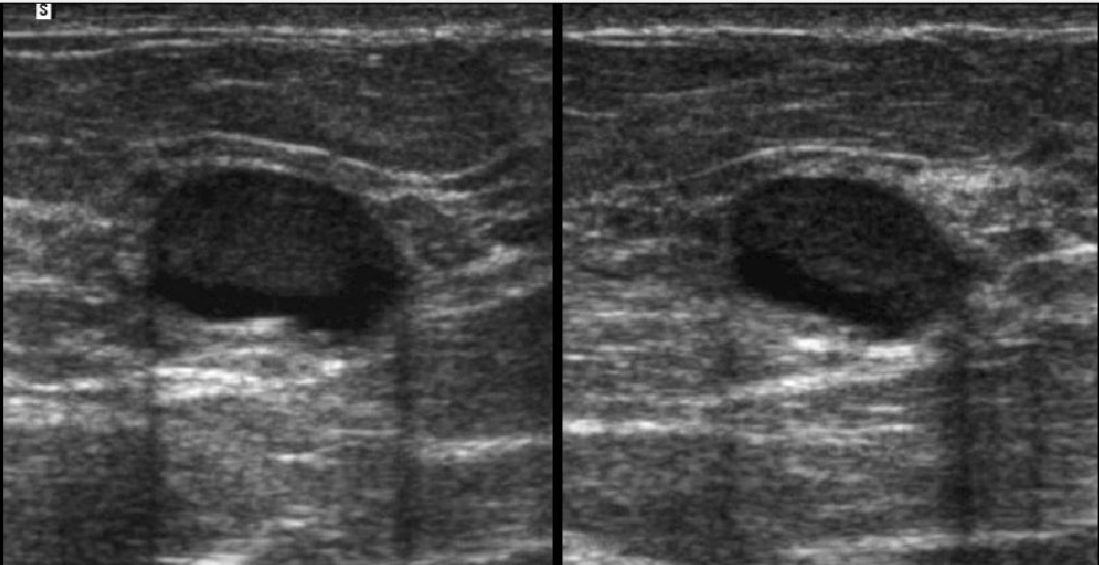
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Fit

Next Case

This 36 year-old woman had an 8mm nonpalpable complicated cyst with fluid-debris level, BIRADS 3, probably benign. This woman had recently finished breastfeeding. Ultrasound-guided aspiration confirmed galactoceles.



Special Case

9 - Not a special case

Shape

4 - Irregular

Margins

3 - Not circumscribed

Orientation

2 - Parallel

Echogenicity

7 - Mixed hyper- and hypoechoic

Posterior Features

4 - Shadowing

Calcifications

1 - None

Final Assessment

7 - Highly suggestive of malignancy

Continue, Next Case

Case 3 of 70

4%

Imaging

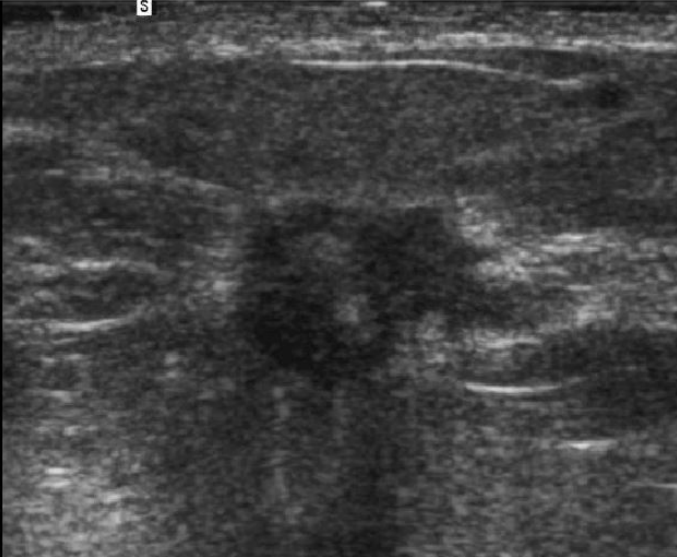
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Fit

Next Case

This 31 year-old woman had a 9mm palpable spiculated mixed hyper- and hypoechoic mass with associated architectural distortion and posterior shadowing, highly suggestive of malignancy, BIRADS 5. Core biopsy showed invasive ductal carcinoma (IDC) grade I.



**Special Case**  
9 - Not a special case

**Shape**  
4 - Irregular

**Margins**  
3 - Not circumscribed

**Orientation**  
3 - Not Parallel (includes round)

Continue, Next Case

**Echogenicity**  
5 - Hypoechoic

**Posterior Features**  
4 - Shadowing

**Calcifications**  
1 - None

**Final Assessment**  
7 - Highly suggestive of malignancy

Case 4 of 70

6%

Imaging

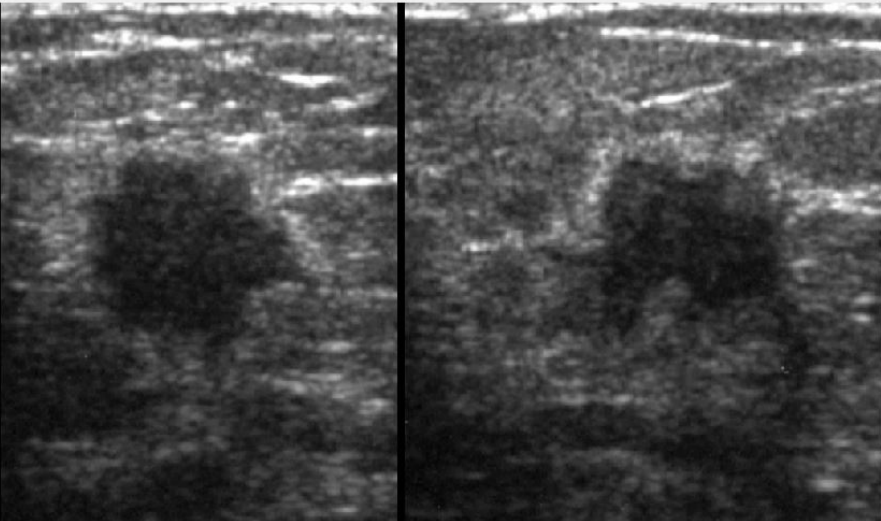
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Fit

Next Case

This 50 year-old woman had an 8mm nonpalpable microlobulated mass that was a malignant IDC proven by bx. BIRADS 5, highly suggestive of malignancy.



### Special Case

9 - Not a special case

### Shape

2 - Oval or Gently Lobulated

### Margins

2 - Circumscribed

### Orientation

2 - Parallel

### Echogenicity

4 - Complex (cystic and solid)

### Posterior Features

3 - Enhancement

### Calcifications

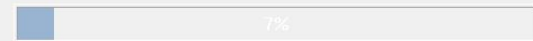
1 - None

### Final Assessment

4 - 4A Low suspicion, biopsy

Continue, Next Case

### Case 5 of 70



Imaging

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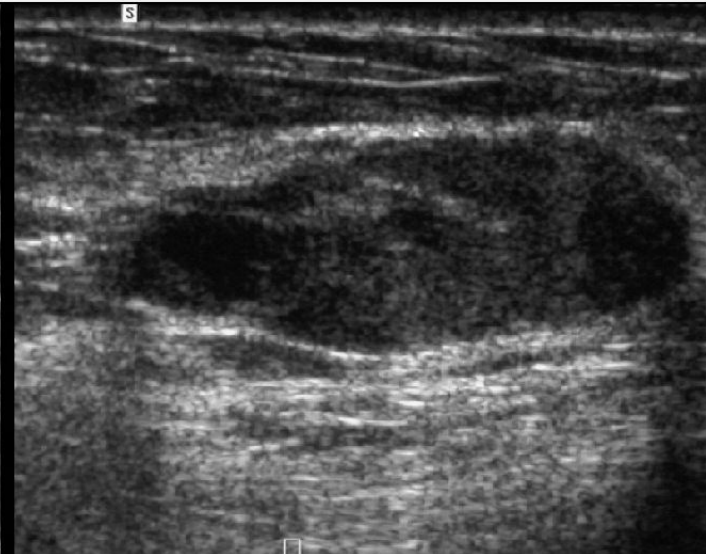
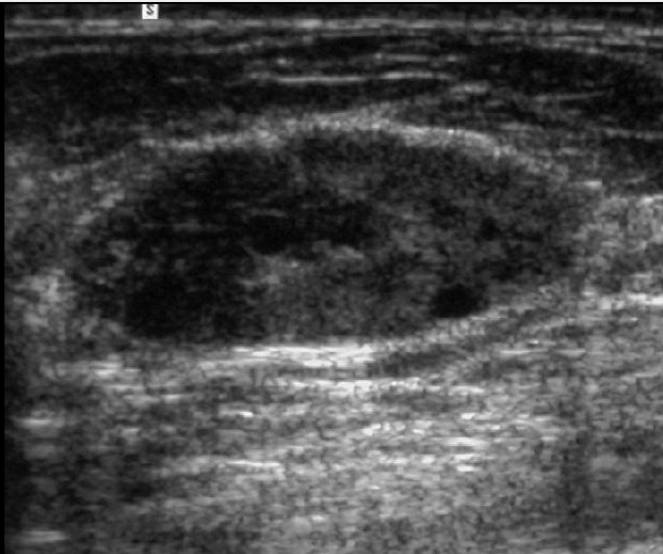
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Fit



Next Case

This 46 year-old woman had a 21mm palpable mass that was a benign FA proven by bx. BIRADS 4A, low suspicion.





Special Case

4 - Clustered Microcysts

Shape

0 - Special Case

Margins

0 - Special Case

Orientation

0 - Special Case

Echogenicity

0 - Special Case

Posterior Features

0 - Special Case

Calcifications

1 - None

Final Assessment

3 - Probably benign

Continue, Next Case

Case 6 of 70

9%

Imaging

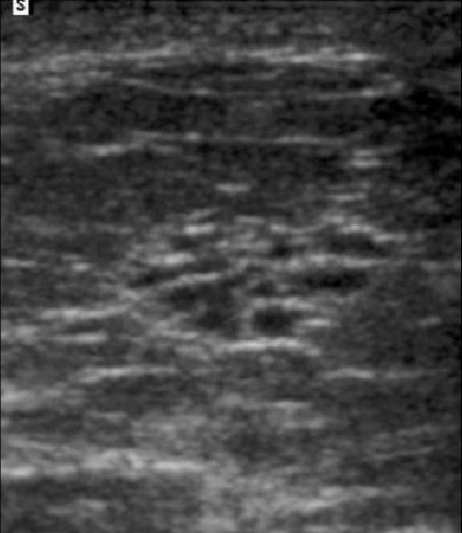
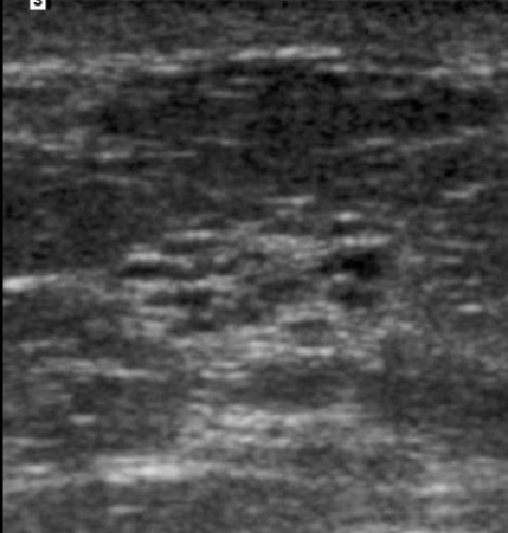
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Fit

Next Case

This 46 year-old woman had a 7mm nonpalpable mass of clustered microcysts compatible with benign fibrocystic changes (FCC) with or without apocrine metaplasia (AM), stable on 2 year follow-up (f/u). BIRADS 3, probably benign.



Special Case

9 - Not a special case

Shape

2 - Oval or Gently Lobulated

Margins

2 - Circumscribed

Orientation

2 - Parallel

Echogenicity

4 - Complex (cystic and solid)

Posterior Features

3 - Enhancement

Calcifications

1 - None

Final Assessment

5 - 4B Intermediate Suspicion, biopsy

Continue, Next Case

Case 7 of 70

10%

Imaging

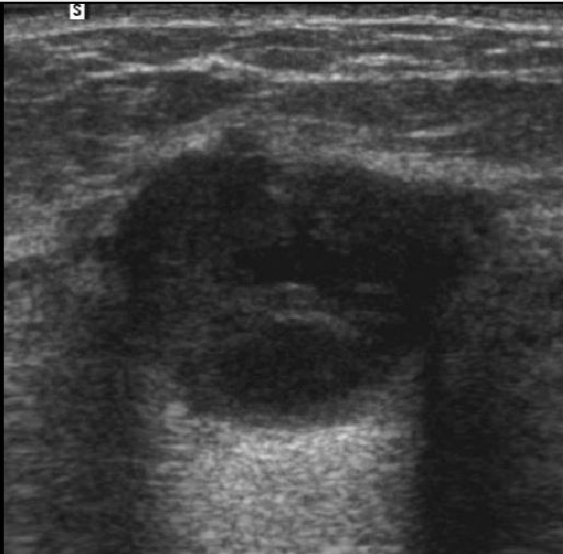
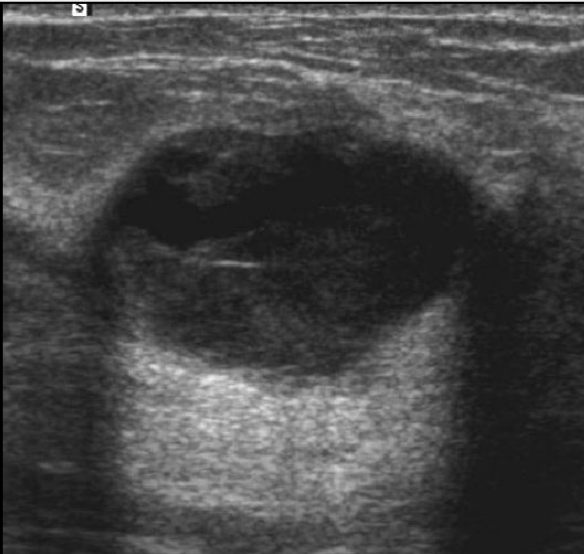
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Fit

Next Case

This 63 year-old woman had a 15mm palpable complex cystic and solid mass that was malignant papillary intracystic ductal carcinoma in situ (DCIS). BIRADS 4B, intermediate suspicion.





Special Case

9 - Not a special case

Shape

2 - Oval or Gently Lobulated

Margins

2 - Circumscribed

Orientation

2 - Parallel

Echogenicity

6 - Isoechoic

Posterior Features

2 - None

Calcifications

1 - None

Final Assessment

4 - 4A Low suspicion, biopsy

Continue, Next Case

Case 8 of 70

11%

Imaging

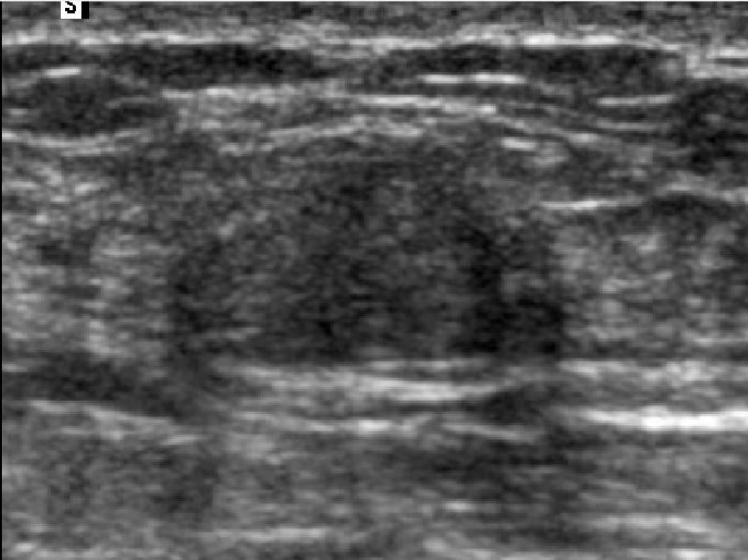
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Fit

Next Case

This 46 year-old woman had an 11mm nonpalpable isoechoic, oval, mostly circumscribed, partially indistinctly marginated mass, confirmed FA on bx. BIRADS 4A, low suspicion.



Special Case

1 - No mass

Shape

1 - No mass

Margins

1 - No mass

Orientation

1 - No mass

Echogenicity

1 - No mass

Posterior Features

1 - No mass

Calcifications

1 - None

Final Assessment

1 - Negative

Continue, Next Case

Case 9 of 70

13%

Imaging

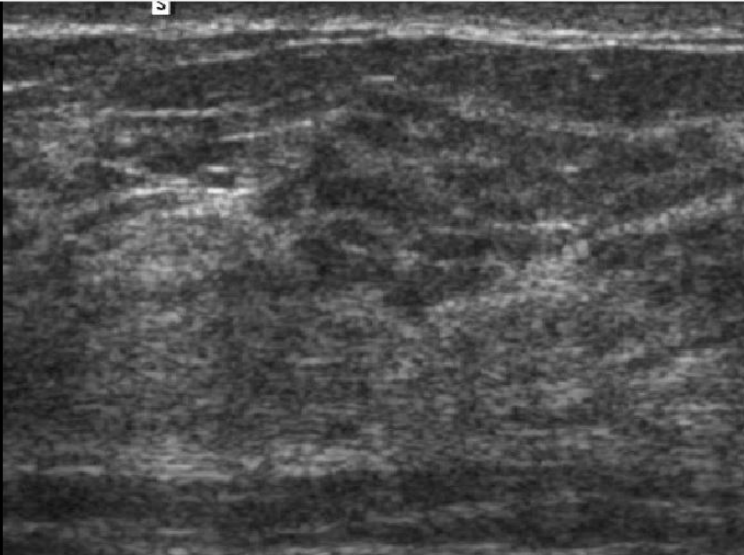
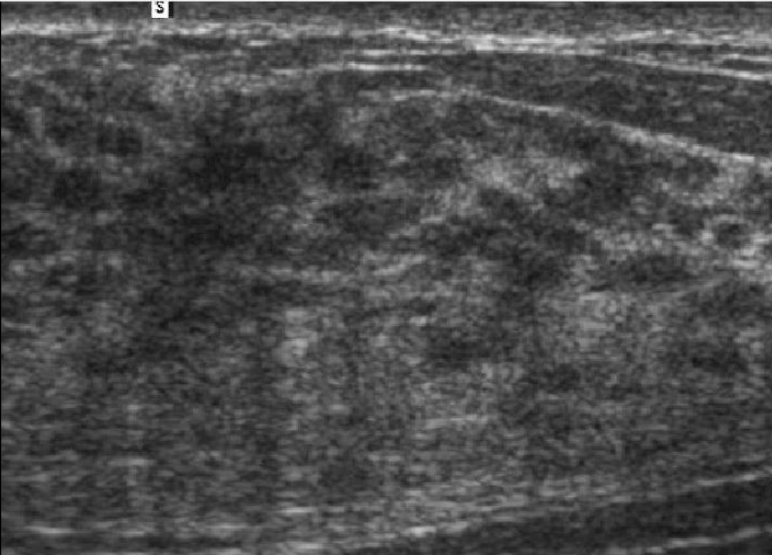
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Fit

Next Case

This is an example of heterogeneous echotexture in normal breast tissue in a 15-year old girl. BIRADS 1, negative.



Special Case

1 - No mass

Shape

1 - No mass

Margins

1 - No mass

Orientation

1 - No mass

Echogenicity

1 - No mass

Posterior Features

1 - No mass

Calcifications

1 - None

Final Assessment

1 - Negative

Continue, Next Case

Case 10 of 70

14%

Imaging

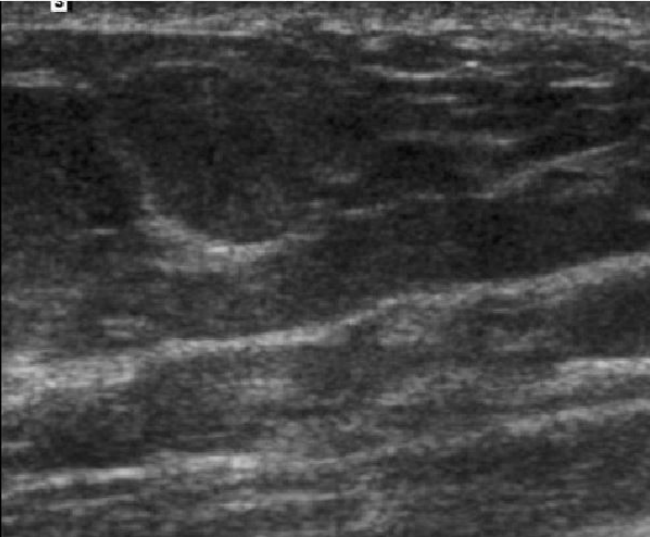
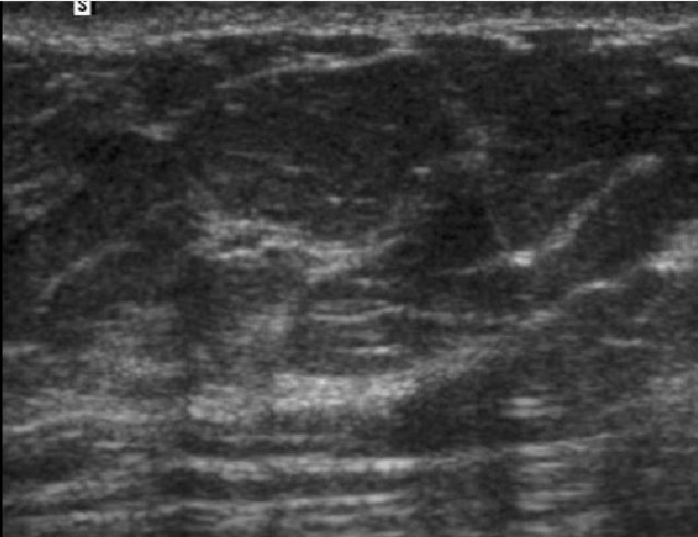
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Fit

Next Case

This is an example of homogeneous echotexture and fat lobules in normal breast tissue in a 40-year old woman. BIRADS 1, negative.



Special Case

1 - No mass

Shape

1 - No mass

Margins

3 - Not circumscribed

Orientation

1 - No mass

Echogenicity

1 - No mass

Posterior Features

4 - Shadowing

Calcifications

4 - Microcalcifications outside a mass

Final Assessment

5 - 4B Intermediate Suspicion, biopsy

Continue, Next Case

Case 11 of 70

16%

Imaging

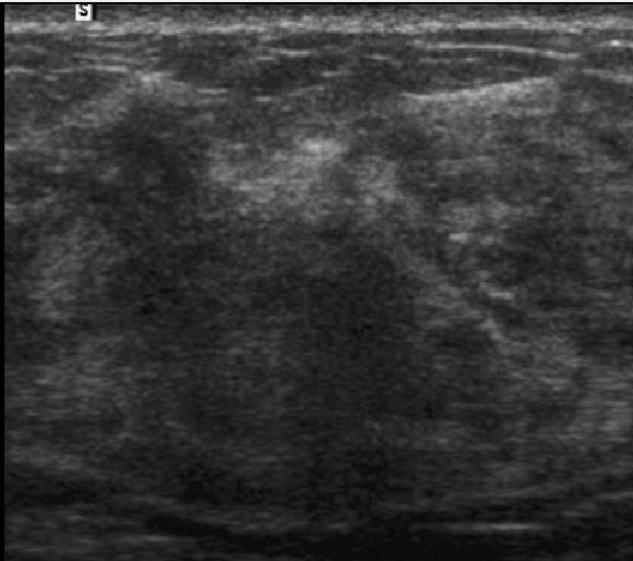
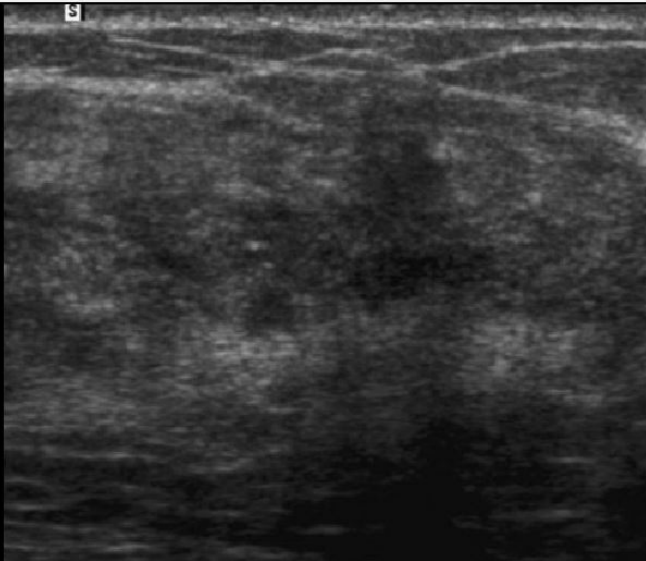
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Fit

Next Case

This 52-year old woman had diffusely heterogeneous echotexture with areas of shadowing and diffuse calcifications. This area was more prominent and vaguely palpable and was biopsied showing fibrocystic changes with calcifications. BIRADS 4B, intermediate suspicion.



Special Case

4 - Clustered Microcysts

Shape

0 - Special Case

Margins

0 - Special Case

Orientation

2 - Parallel

Echogenicity

4 - Complex (cystic and solid)

Posterior Features

3 - Enhancement

Calcifications

1 - None

Final Assessment

3 - Probably benign

Continue, Next Case

Case 12 of 70

17%

Imaging

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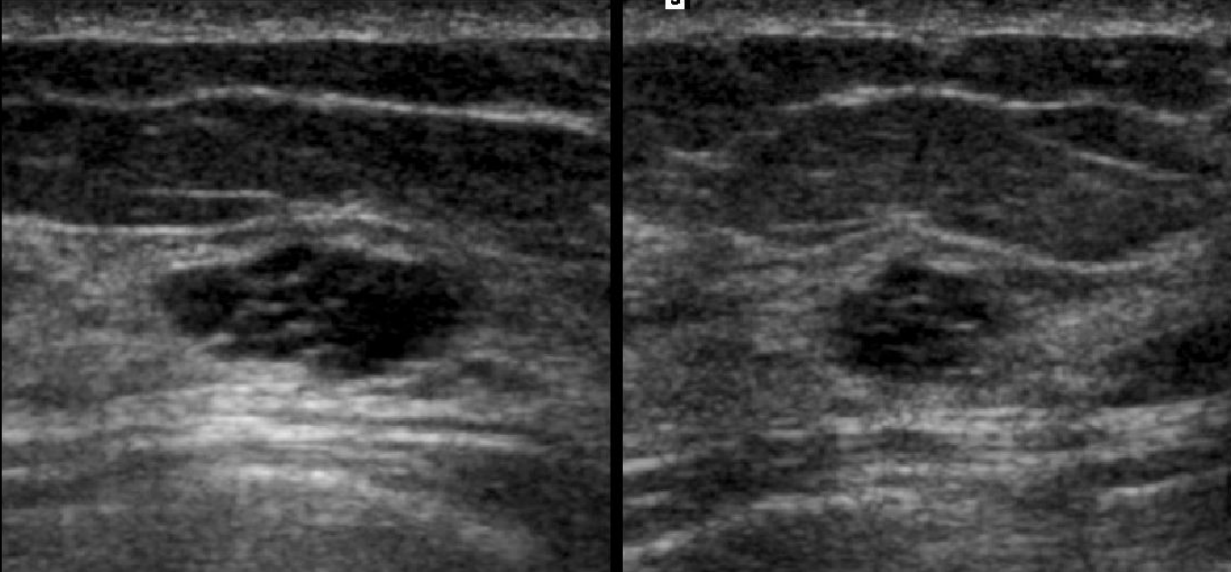
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Fit



Next Case

This 57 year-old woman had an 11mm nonpalpable mass of clustered microcysts compatible with benign fibrocystic changes (FCC) with or without apocrine metaplasia (AM), stable on 2 year follow-up. BIRADS 3, probably benign.





**Special Case**

1 - No mass

**Shape**

1 - No mass

**Margins**

1 - No mass

**Orientation**

1 - No mass

**Echogenicity**

1 - No mass

**Posterior Features**

1 - No mass

**Calcifications**

1 - None

**Final Assessment**

1 - Negative

Continue, Next Case

**Case 13 of 70**



10%

Imaging

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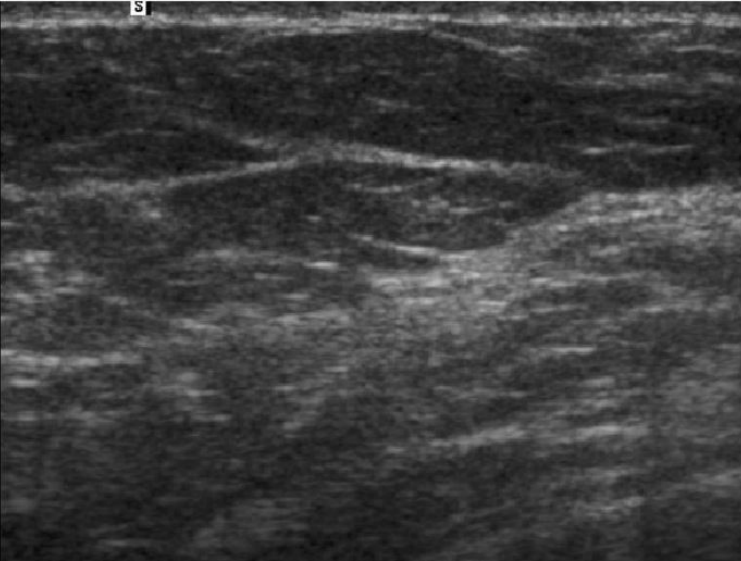
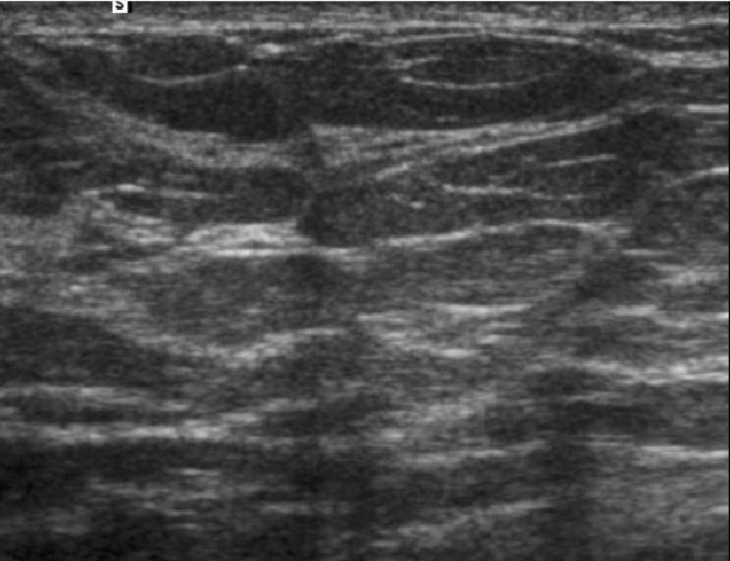
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Fit



Next Case

This is an example of homogeneous echotexture and fat lobules in normal breast tissue in a 33-year old woman. BIRADS 1, negative.



**Special Case**

9 - Not a special case

**Shape**

2 - Oval or Gently Lobulated

**Margins**

3 - Not circumscribed

**Orientation**

2 - Parallel

Continue, Next Case

**Echogenicity**

4 - Complex (cystic and solid)

**Posterior Features**

3 - Enhancement

**Calcifications**

1 - None

**Final Assessment**

5 - 4B Intermediate Suspicion, biopsy

**Case 14 of 70**

20%

Imaging

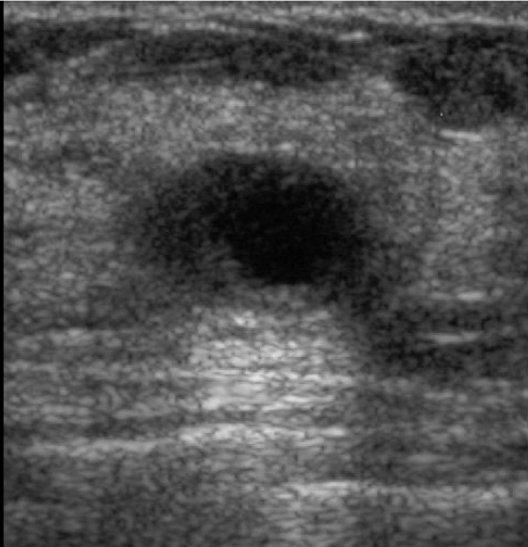
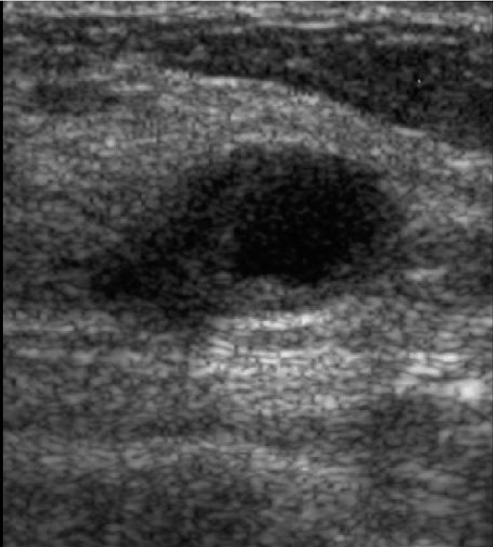
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Fit

Next Case

This 41 year-old woman had a 12mm palpable complex cystic and solid mass with a thick, indistinctly marginated wall; such a mass is of intermediate suspicion, BIRADS 4B. Malignant IDC grade III T1c proven by bx.



**Special Case**  
3 - Complicated Cyst

**Shape**  
0 - Special Case

**Margins**  
2 - Circumscribed

**Orientation**  
2 - Parallel

**Echogenicity**  
5 - Hypoechoic

**Posterior Features**  
3 - Enhancement

**Calcifications**  
1 - None

**Final Assessment**  
3 - Probably benign

Continue, Next Case

Case 15 of 70

21%

Imaging

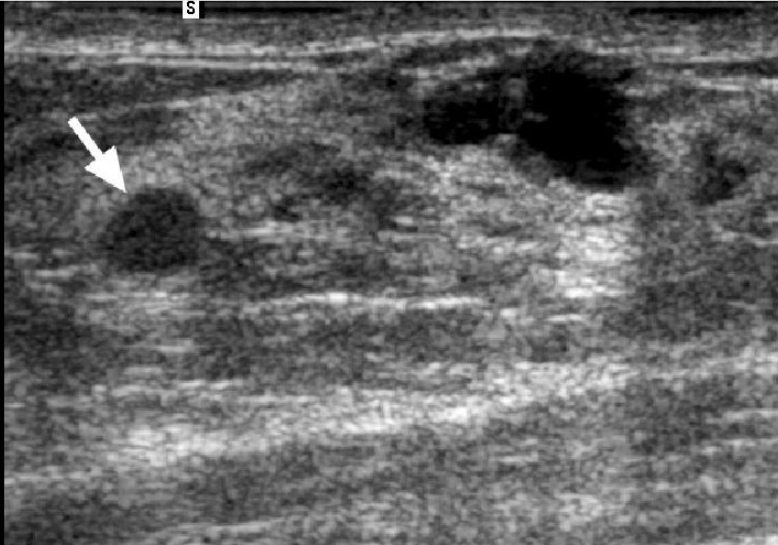
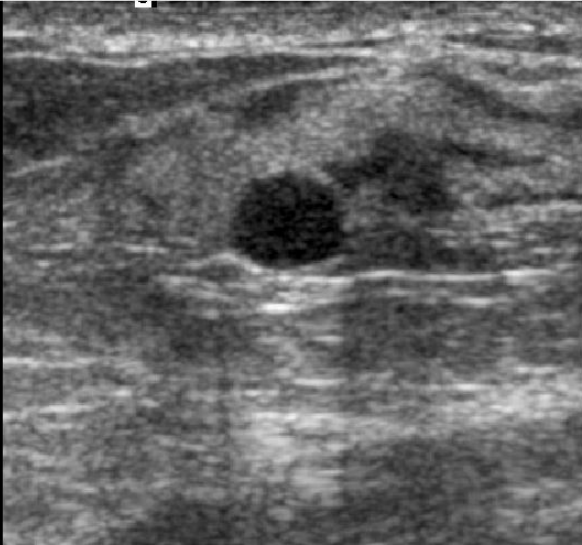
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Fit

Next Case

This 37 year-old woman had a 4mm nonpalpable mass that was a benign complicated cyst proven by f/u. A complicated cyst with homogeneous low-level echoes, in the setting of adjacent cysts, can be considered BIRADS 2, benign, or BIRADS 3, probably benign, provided it is not known to be new mammographically or palpable.





Special Case

5 - Intraductal Mass

Shape

0 - Special Case

Margins

0 - Special Case

Orientation

0 - Special Case

Echogenicity

0 - Special Case

Posterior Features

0 - Special Case

Calcifications

1 - None

Final Assessment

4 - 4A Low suspicion, biopsy

Continue, Next Case

Case 16 of 70





Imaging

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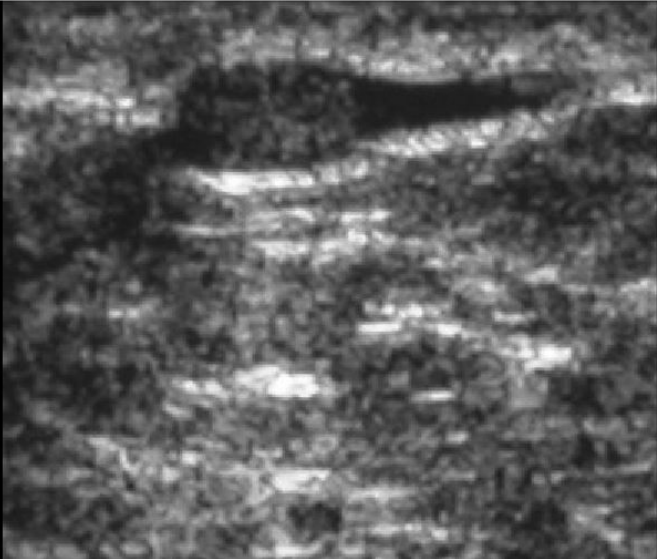
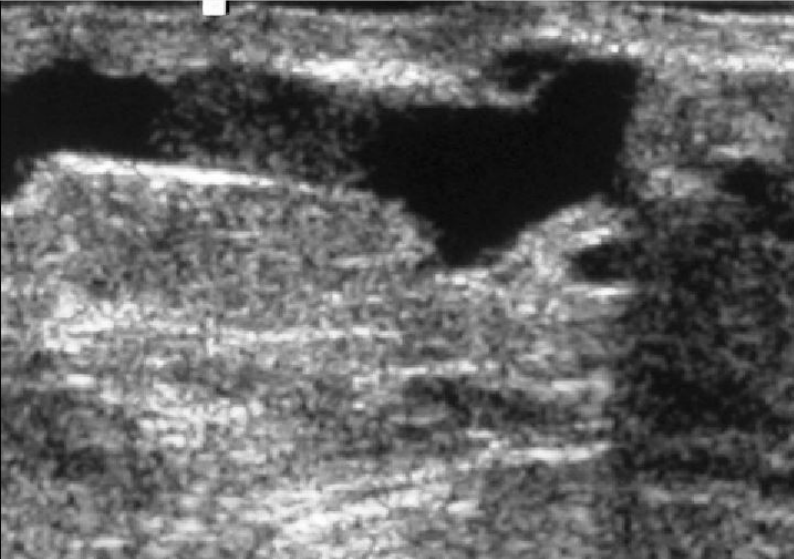
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Fit



Next Case

This 62 year-old woman had an 8mm nonpalpable mass that was a benign papilloma proven by bx. Intraductal masses are usually papillomas, and usually classified as BIRADS 4A, low suspicion, as in this case.



Special Case

9 - Not a special case

Shape

4 - Irregular

Margins

3 - Not circumscribed

Orientation

3 - Not Parallel (includes round)

Echogenicity

5 - Hypoechoic

Posterior Features

2 - None

Calcifications

1 - None

Final Assessment

5 - 4B Intermediate Suspicion, biopsy

Continue, Next Case

Case 17 of 70

24%

Imaging

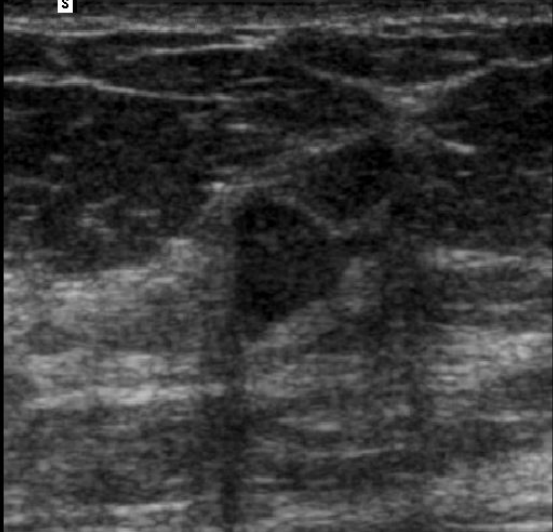


Fit



Next Case

This 54 year-old woman had a 7mm angular, hypoechoic, nonpalpable mass that proved to be a complex sclerosing lesion with atypical ductal hyperplasia (ADH) and a papilloma on core and excisional bx. BIRADS 4B, intermediate suspicion.



**Special Case**

9 - Not a special case

**Shape**

2 - Oval or Gently Lobulated

**Margins**

2 - Circumscribed

**Orientation**

2 - Parallel

**Echogenicity**

5 - Hypoechoic

**Posterior Features**

2 - None

**Calcifications**

1 - None

**Final Assessment**

3 - Probably benign

Continue, Next Case

**Case 18 of 70**

26%

Imaging

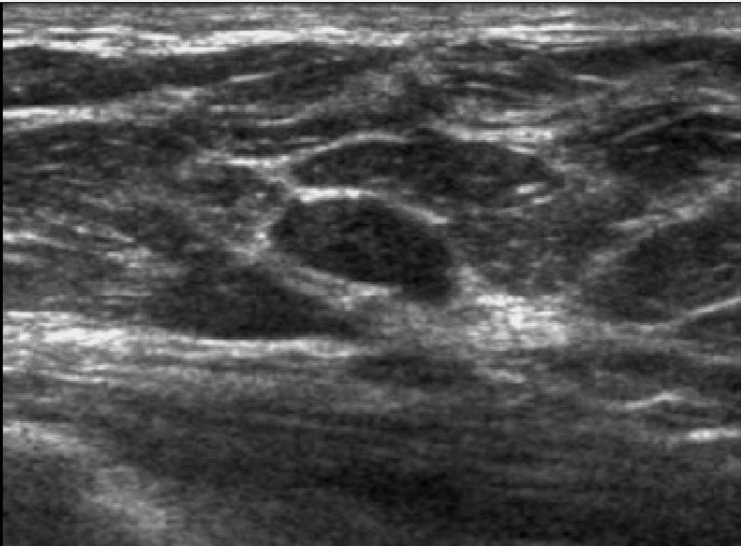
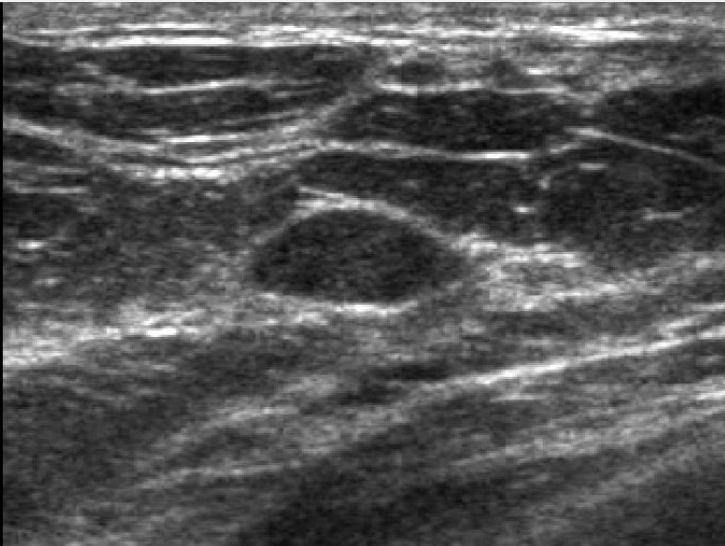
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Fit

Next Case

This 40 year-old woman had a 7mm oval, circumscribed, iso- to slightly hypoechoic nonpalpable mass with no posterior features that was a benign FA proven by bx. BIRADS 3, probably benign.



Special Case

9 - Not a special case

Shape

4 - Irregular

Margins

3 - Not circumscribed

Orientation

2 - Parallel

Continue, Next Case

Echogenicity

5 - Hypoechoic

Posterior Features

3 - Enhancement

Calcifications

1 - None

Final Assessment

5 - 4B Intermediate Suspicion, biopsy

Case 19 of 70


27%

Imaging

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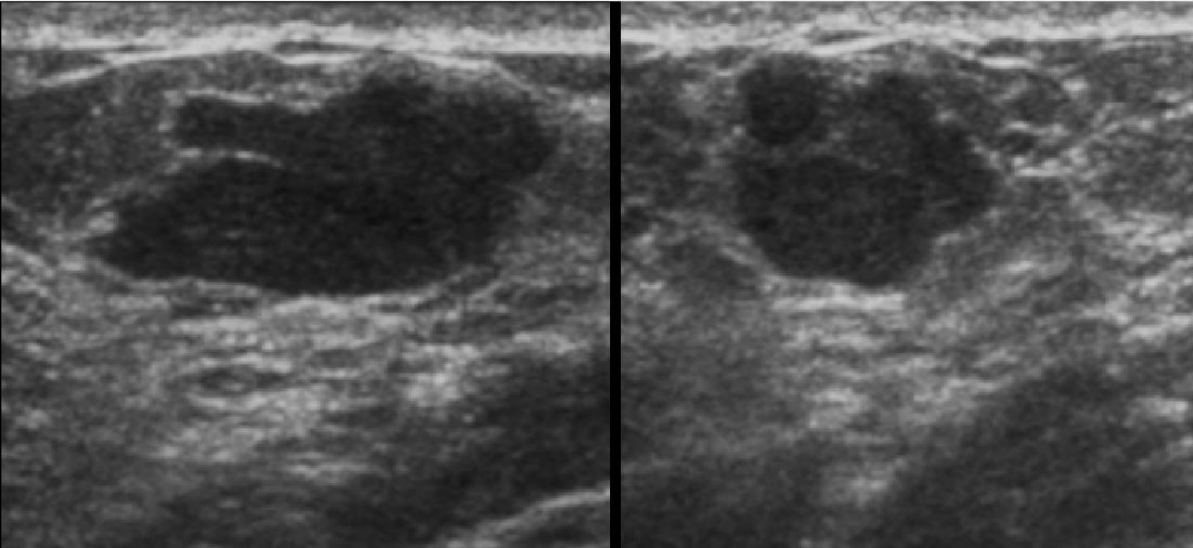
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Fit



Next Case

This 30 year-old woman had an 18mm palpable mass with more than two or three lobulations (therefore irregular), hypoechoic with minimal posterior enhancement that proved to be benign lactational changes on bx. **BIRADS 4B**, intermediate suspicion.



Special Case

9 - Not a special case

Shape

4 - Irregular

Margins

3 - Not circumscribed

Orientation

2 - Parallel

Echogenicity

7 - Mixed hyper- and hypoechoic

Posterior Features

4 - Shadowing

Calcifications

3 - Microcalcifications in a mass

Final Assessment

6 - 4C Moderate Suspicion, biopsy

Continue, Next Case

Case 20 of 70

29%

Imaging

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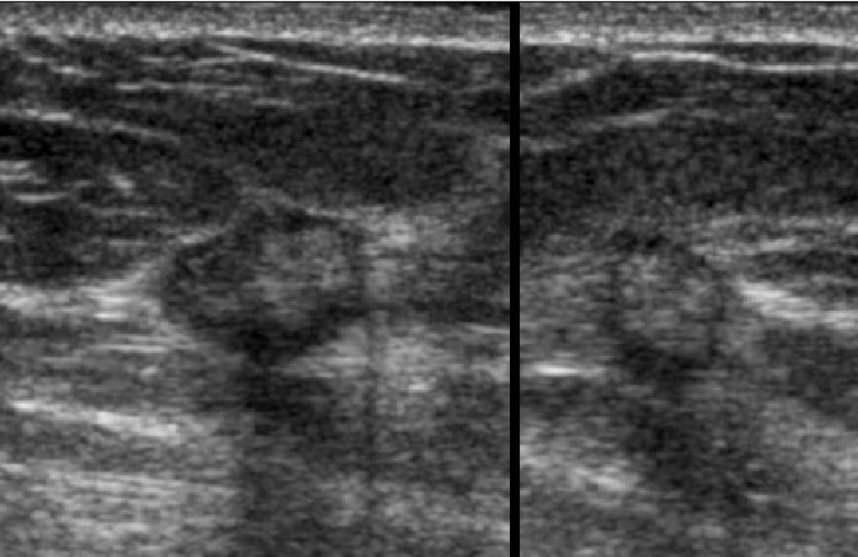
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Fit



Next Case

This 55 year-old woman had an 8mm spiculated, nonpalpable mass that was a malignant IDC grade I proven by bx. The central increased echogenicity was due to fine calcifications seen better mammographically. BIRADS 4C, moderate suspicion.





Special Case

7 - Lymph Node

Shape

0 - Special Case

Margins

0 - Special Case

Orientation

2 - Parallel

Echogenicity

0 - Special Case

Posterior Features

0 - Special Case

Calcifications

1 - None

Final Assessment

4 - 4A Low suspicion, biopsy

Continue, Next Case

Case 21 of 70



Imaging

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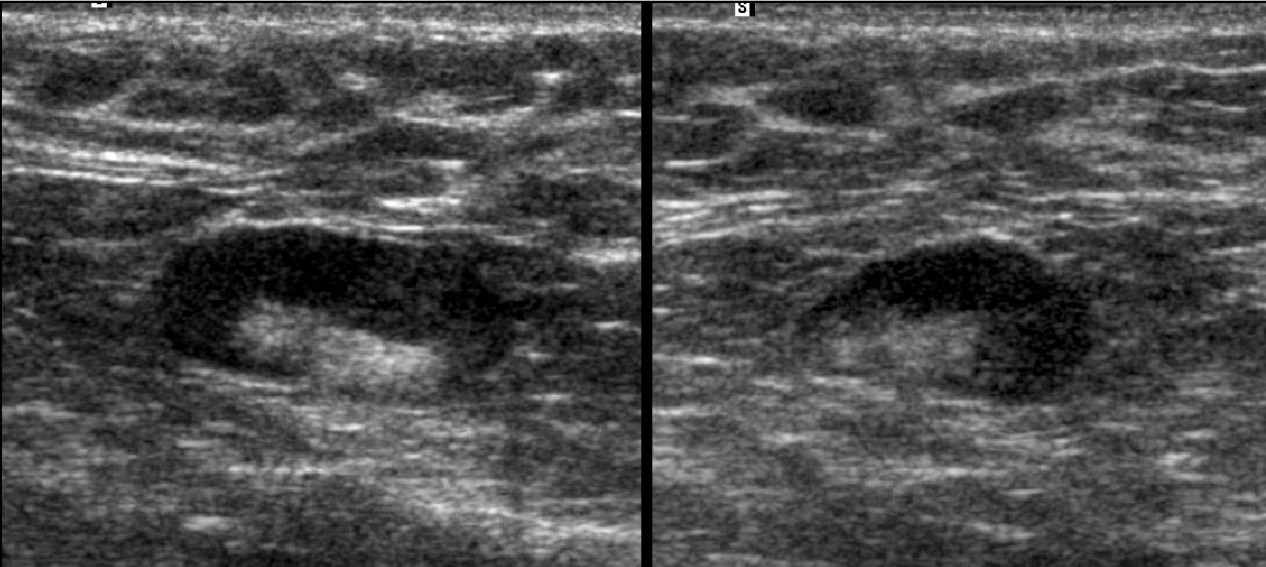
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Fit



Next Case

This 47 year-old woman had a 12mm nonpalpable mass that was a benign lymph node proven by fine needle aspiration (FNA). With a diffusely thickened cortex, depending on the clinical setting, this could be a reactive, inflammatory node, or a node involved by tumor. BIRADS 3, probably benign in a patient with HIV or inflammatory condition; BIRADS 4A in a patient with no known medical history; or BIRADS 4B, intermediate



Special Case

9 - Not a special case

Shape

4 - Irregular

Margins

3 - Not circumscribed

Orientation

3 - Not Parallel (includes round)

Continue, Next Case

Echogenicity

5 - Hypoechoic

Posterior Features

4 - Shadowing

Calcifications

1 - None

Final Assessment

7 - Highly suggestive of malignancy

Case 22 of 70

31%

Imaging

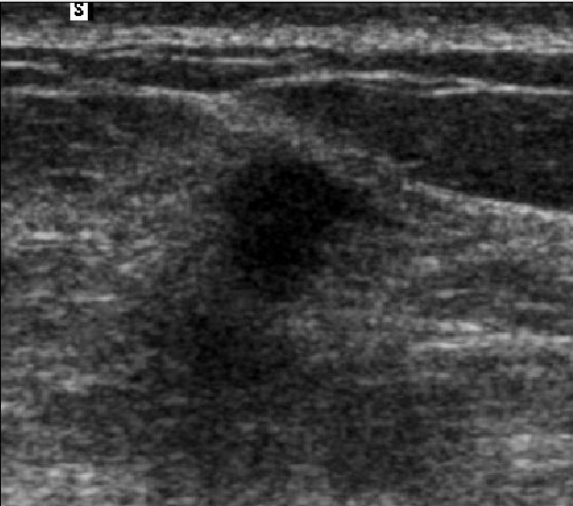
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Fit

Next Case

This 53 year-old woman had a 7mm nonpalpable irregular, spiculated, hypoechoic mass that was a malignant IDC grade III proven by bx. BIRADS 5, highly suggestive of malignancy.



### Special Case

9 - Not a special case

### Shape

4 - Irregular

### Margins

3 - Not circumscribed

### Orientation

2 - Parallel

### Echogenicity

5 - Hypoechoic

### Posterior Features

3 - Enhancement

### Calcifications

1 - None

### Final Assessment

5 - 4B Intermediate Suspicion, biopsy

Continue, Next Case

### Case 23 of 70

33%

Imaging

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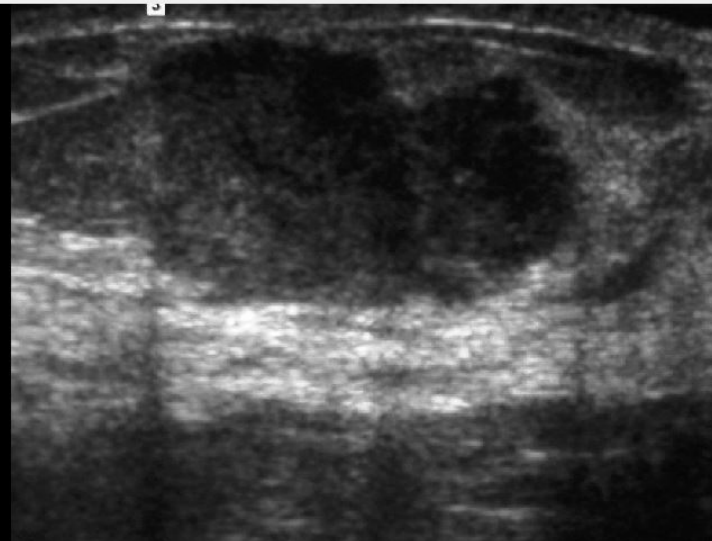
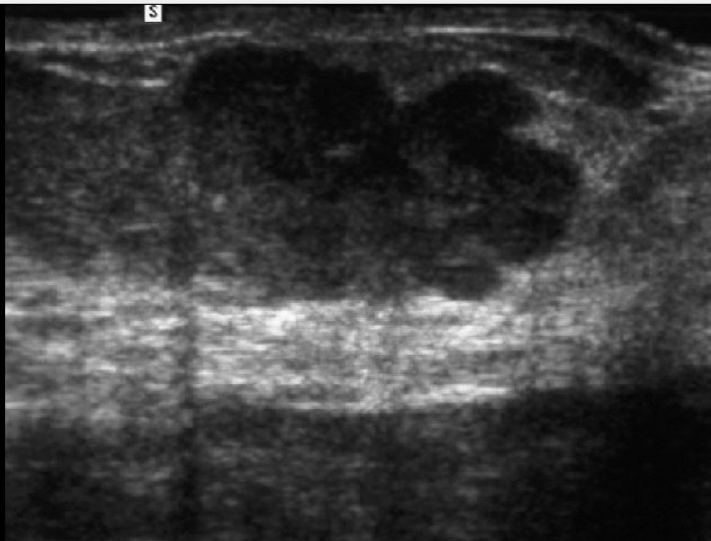
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Fit



Next Case

This 61 year-old woman had a 17mm palpable, irregular, microlobulated mass that was a malignant colloid carcinoma, IDC grade I proven by bx. BIRADS 4B, intermediate suspicion.





### Special Case

1 - No mass

### Shape

1 - No mass

### Margins

1 - No mass

### Orientation

1 - No mass

### Echogenicity

1 - No mass

### Posterior Features

1 - No mass

### Calcifications

1 - None

### Final Assessment

1 - Negative

Continue, Next Case

### Case 24 of 70

34%

Imaging

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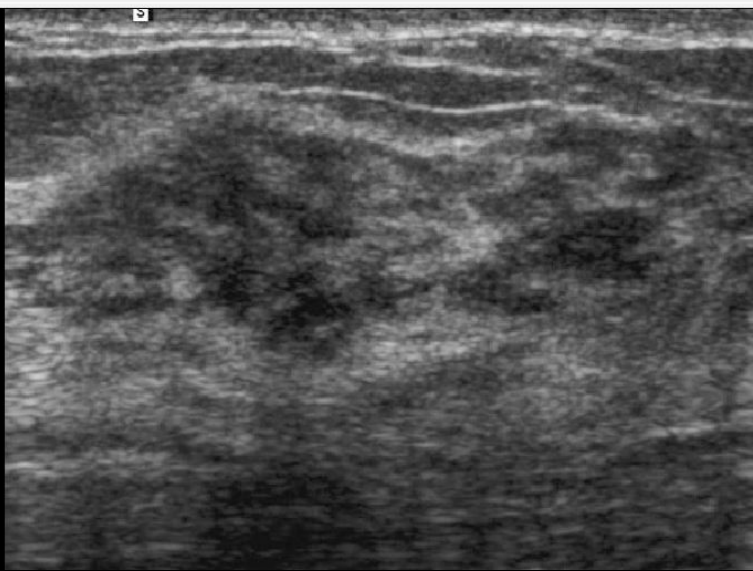
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Fit



Next Case

This is an example of heterogeneous echotexture in normal breast tissue in a 47 year-old woman. BIRADS 1, negative.



### Special Case

9 - Not a special case

### Shape

4 - Irregular

### Margins

3 - Not circumscribed

### Orientation

3 - Not Parallel (includes round)

### Echogenicity

5 - Hypoechoic

### Posterior Features

2 - None

### Calcifications

1 - None

### Final Assessment

6 - 4C Moderate Suspicion, biopsy

Continue, Next Case

### Case 25 of 70



Imaging

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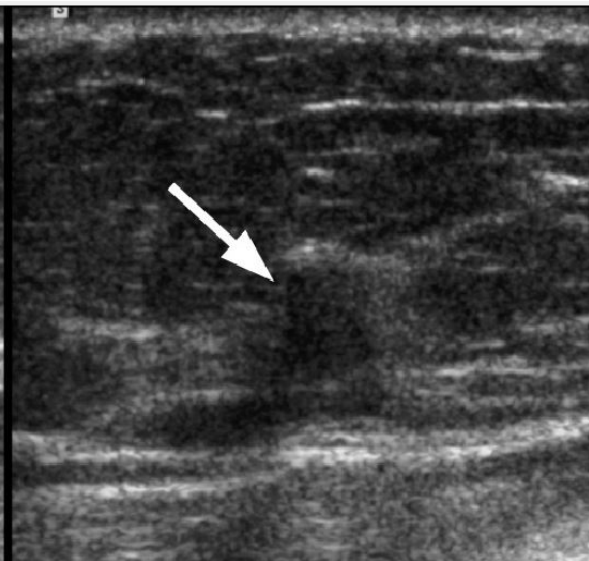
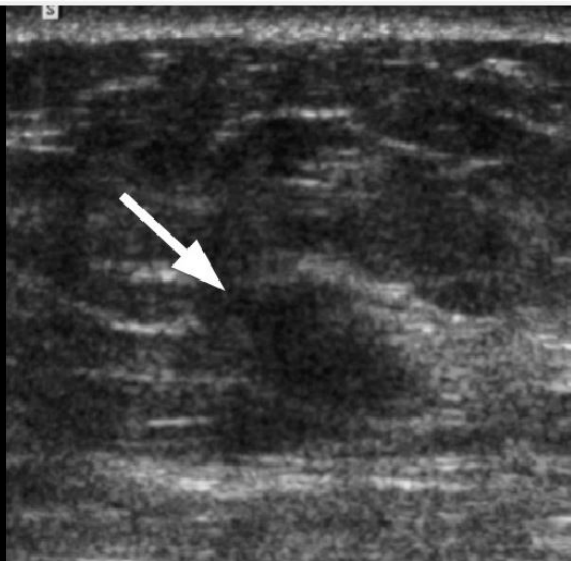
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Fit



Next Case

This 46 year-old woman had an 11mm nonpalpable, indistinctly marginated hypo- to isoechoic mass that was a malignant IDC proven by bx. **BIRADS 4C, moderate suspicion.**



**Special Case**  
9 - Not a special case

**Shape**  
4 - Irregular

**Margins**  
3 - Not circumscribed

**Orientation**  
2 - Parallel

**Echogenicity**  
3 - Hyperechoic

**Posterior Features**  
2 - None

**Calcifications**  
1 - None

**Final Assessment**  
3 - Probably benign

Continue, Next Case

Case 26 of 70


37%

Imaging

+

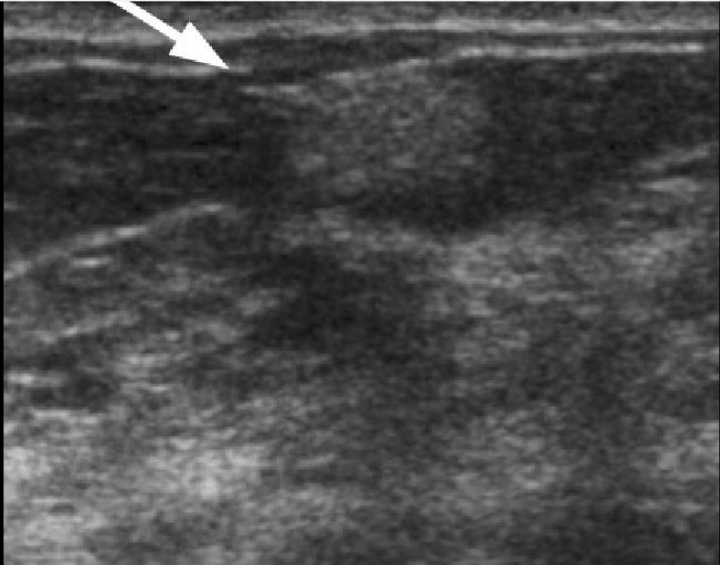
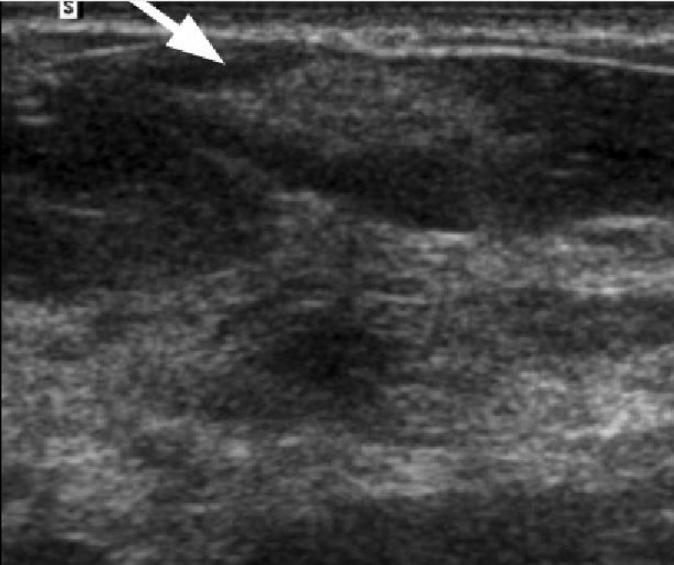
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Fit



Next Case

This 72 year-old woman had a 13mm palpable irregular, uniformly hyperechoic mass in a patient with recent trauma. BIRADS 3, probably benign. This is presumed fat necrosis and resolved on follow-up. Islands of normal variant fat or fibrotic tissue can have a similar appearance.



### Special Case

9 - Not a special case

### Shape

2 - Oval or Gently Lobulated

### Margins

3 - Not circumscribed

### Orientation

3 - Not Parallel (includes round)

### Echogenicity

5 - Hypoechoic

### Posterior Features

3 - Enhancement

### Calcifications

1 - None

### Final Assessment

6 - 4C Moderate Suspicion, biopsy

Continue, Next Case

### Case 27 of 70


33%

Imaging

+

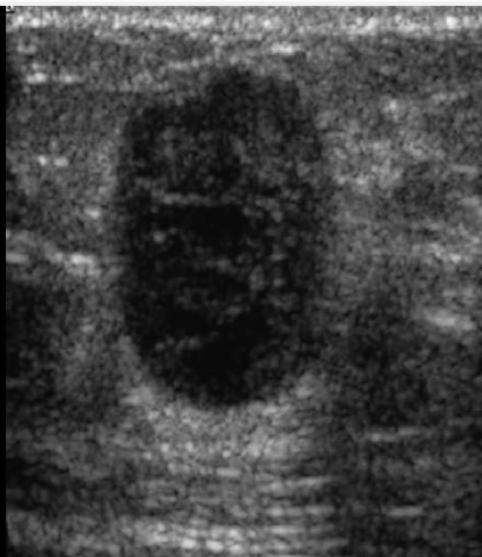
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Fit



Next Case

This 57 year-old woman had a 16mm vertically-oriented, indistinctly marginated, oval, hypoechoic, palpable mass that was a malignant IDC proven by biopsy. BIRADS 4C, moderate suspicion.



Special Case

9 - Not a special case

Shape

2 - Oval or Gently Lobulated

Margins

3 - Not circumscribed

Orientation

2 - Parallel

Echogenicity

5 - Hypoechoic

Posterior Features

3 - Enhancement

Calcifications

1 - None

Final Assessment

4 - 4A Low suspicion, biopsy

Continue, Next Case

Case 28 of 70


40%

Imaging

+

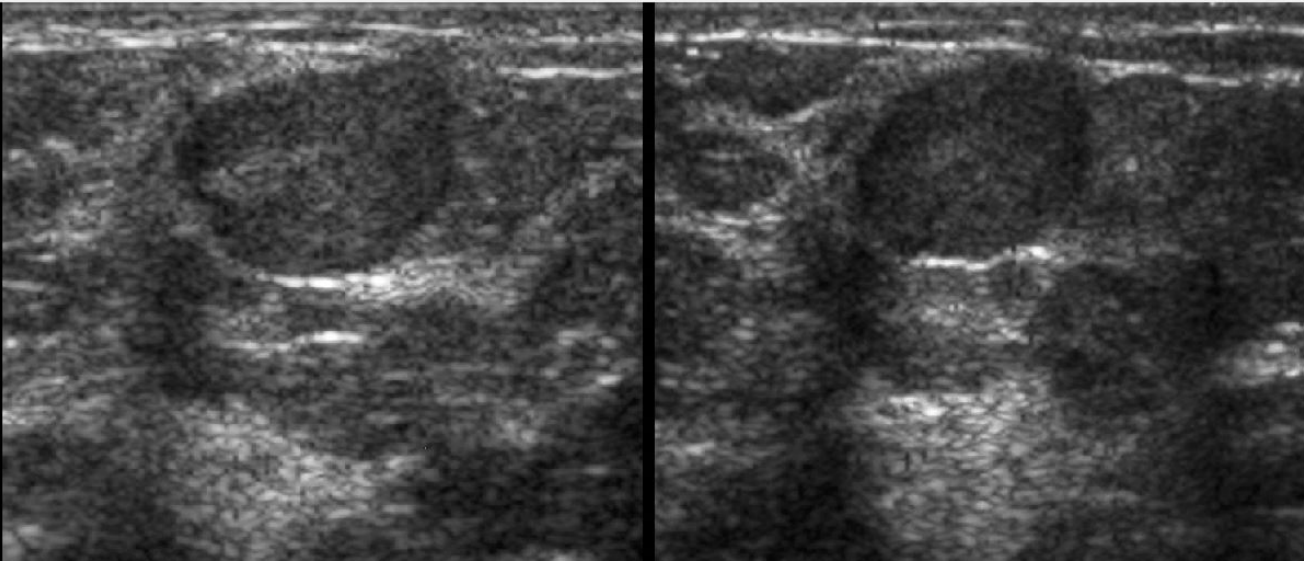
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Fit



Next Case

This 52 year-old woman had a 15mm palpable, oval (almost round), mostly circumscribed, partially indistinctly marginated, hypoechoic mass with posterior enhancement (that was new mammographically), of low suspicion, BIRADS 4A. Core biopsy showed malignant IDC, grade III.





Special Case

9 - Not a special case

Shape

2 - Oval or Gently Lobulated

Margins

3 - Not circumscribed

Orientation

2 - Parallel

Echogenicity

3 - Hyperechoic

Posterior Features

2 - None

Calcifications

1 - None

Final Assessment

2 - Benign

Continue, Next Case

Case 29 of 70


41%

Imaging

+

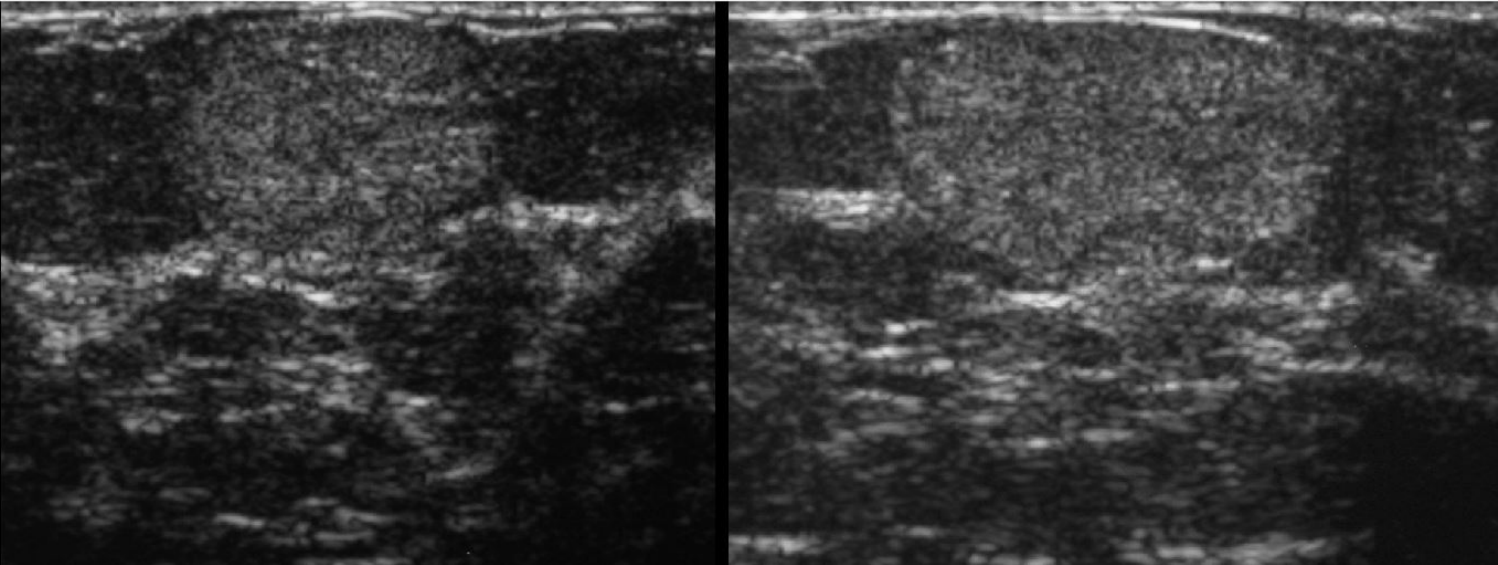
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Fit



Next Case

This 37 year-old woman had a 12mm palpable mass that was a benign lipoma proven by mammography. The mass is uniformly hyperechoic. BIRADS 2, benign.



### Special Case

9 - Not a special case

### Shape

2 - Oval or Gently Lobulated

### Margins

3 - Not circumscribed

### Orientation

2 - Parallel

### Echogenicity

5 - Hypoechoic

### Posterior Features

3 - Enhancement

### Calcifications

1 - None

### Final Assessment

4 - 4A Low suspicion, biopsy

Continue, Next Case

### Case 30 of 70



Imaging

+

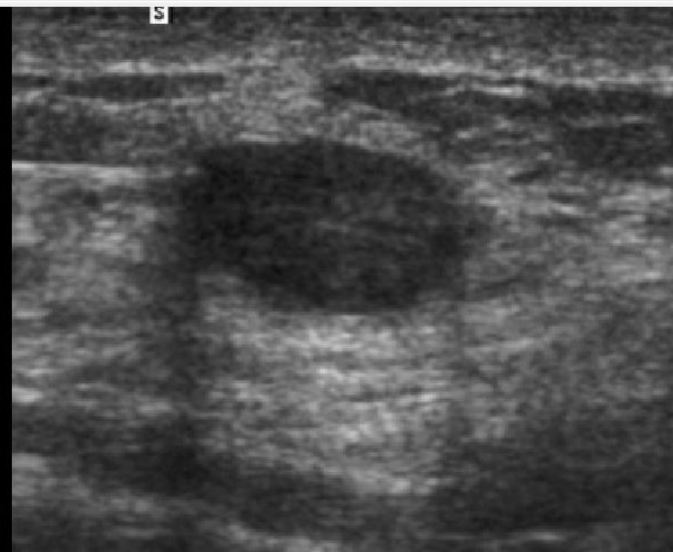
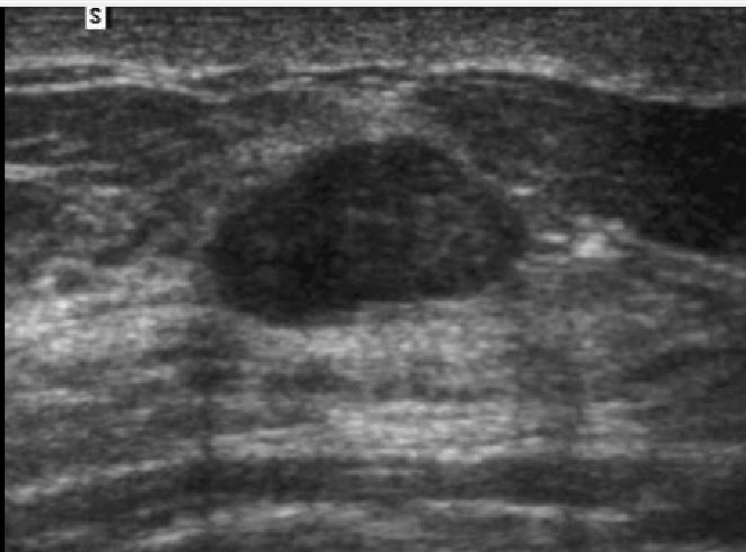
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Fit



Next Case

This 28 year-old woman had a 12mm palpable mostly circumscribed, partially indistinctly marginated mass that was a benign FA proven by bx. **BIRADS 4A, low suspicion.**



Special Case

9 - Not a special case

Shape

2 - Oval or Gently Lobulated

Margins

3 - Not circumscribed

Orientation

2 - Parallel

Echogenicity

4 - Complex (cystic and solid)

Posterior Features

3 - Enhancement

Calcifications

1 - None

Final Assessment

5 - 4B Intermediate Suspicion, biopsy

Continue, Next Case

Case 31 of 70



Imaging

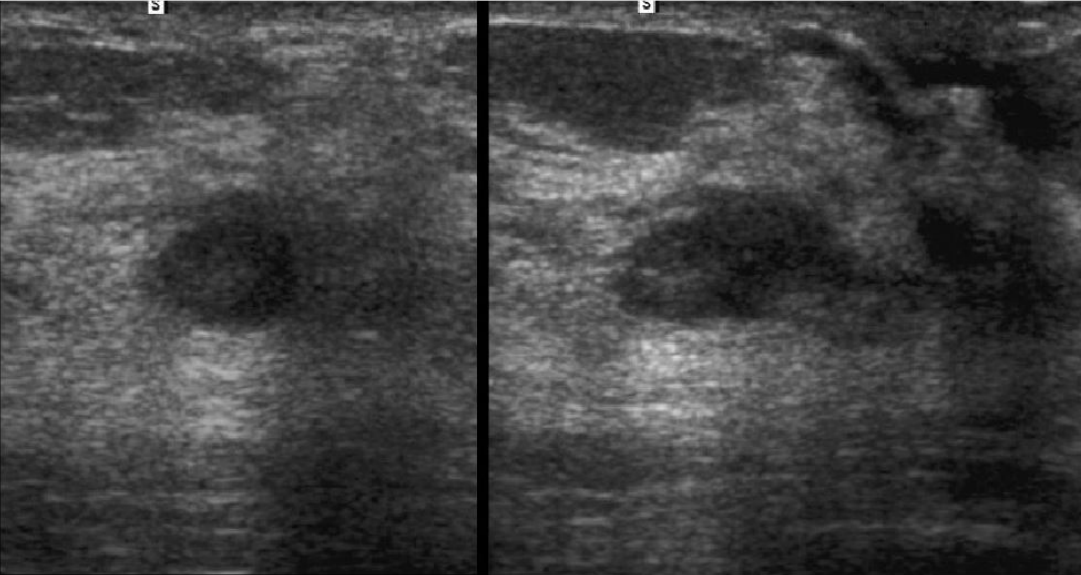
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Fit

Next Case

This 59 year-old woman had a 12mm nonpalpable indistinctly marginated hypoechoic mass that proved to be malignant intracystic papillary DCIS on bx. The mass had been stable for two years (erroneously followed). BIRADS 4B, intermediate suspicion.





Special Case

9 - Not a special case

Shape

4 - Irregular

Margins

3 - Not circumscribed

Orientation

3 - Not Parallel (includes round)

Continue, Next Case

Echogenicity

5 - Hypoechoic

Posterior Features

3 - Enhancement

Calcifications

3 - Microcalcifications in a mass

Final Assessment

7 - Highly suggestive of malignancy

Case 32 of 70

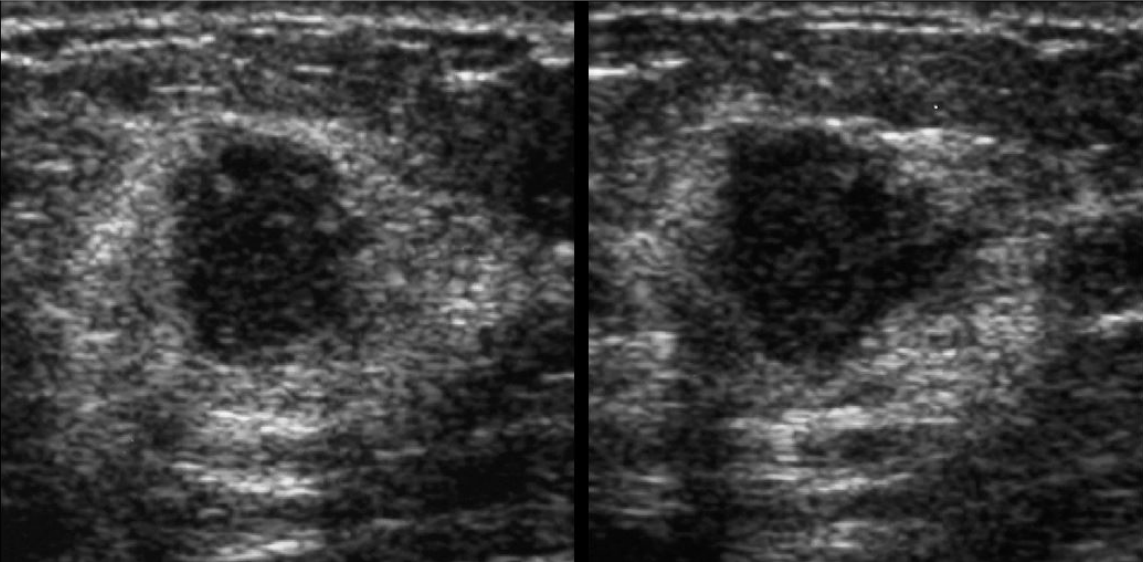


Imaging

+ - Fit

Next Case

This 57 year-old woman had a 13mm palpable microlobulated mass with an echogenic halo that was a malignant IDC grade III proven by bx. Echogenic foci within the mass were due to microcalcifications. BIRADS 5, highly suggestive of malignancy.



Special Case

9 - Not a special case

Shape

4 - Irregular

Margins

3 - Not circumscribed

Orientation

3 - Not Parallel (includes round)

Echogenicity

5 - Hypoechoic

Posterior Features

3 - Enhancement

Calcifications

3 - Microcalcifications in a mass

Final Assessment

6 - 4C Moderate Suspicion, biopsy

Continue, Next Case

Case 33 of 70





Imaging

+

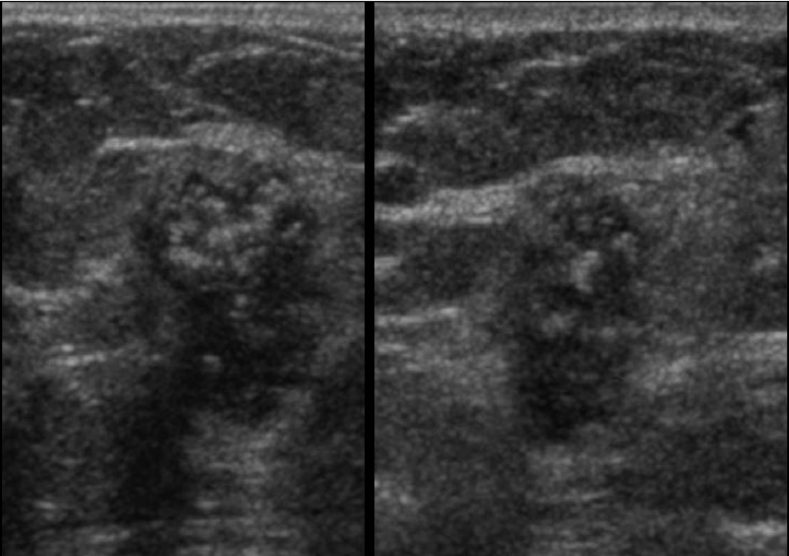
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Fit



Next Case

This 56 year-old woman had a 16mm palpable mass that was a malignant IDC grade II proven by bx. This irregular, vertically oriented mass with macro- and microcalcifications within it is moderately suspicious, BIRADS 4C.



### Special Case

9 - Not a special case

### Shape

3 - Round

### Margins

2 - Circumscribed

### Orientation

2 - Parallel

### Echogenicity

5 - Hypoechoic

### Posterior Features

4 - Shadowing

### Calcifications

2 - Macrocalcifications ( $\geq 0.5$  mm)

### Final Assessment

2 - Benign

Continue, Next Case

### Case 34 of 70

49%

Imaging

+

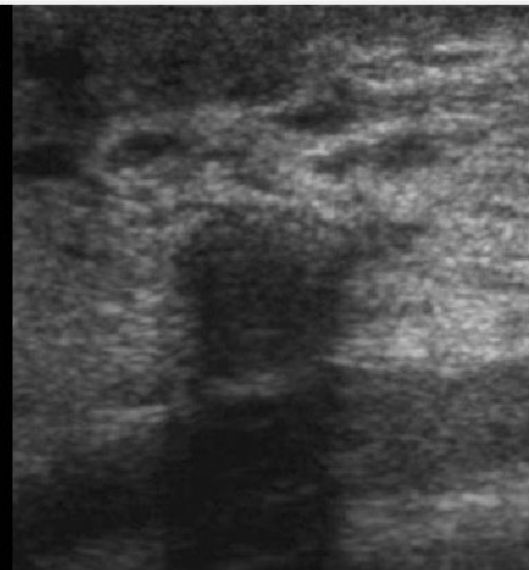
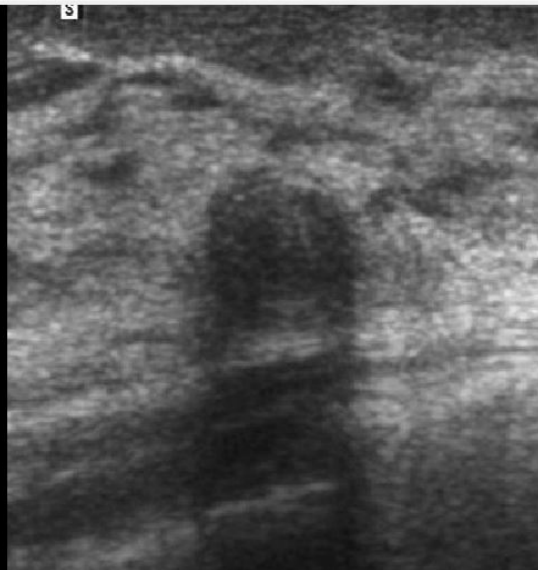
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Fit



Next Case

This 59 year-old woman had a 6mm nonpalpable mass that demonstrates a calcified rim, consistent with benign etiology, BIRADS 2. This lesion was a calcified oil cyst (fat necrosis) on mammography.



Special Case

9 - Not a special case

Shape

2 - Oval or Gently Lobulated

Margins

3 - Not circumscribed

Orientation

2 - Parallel

Echogenicity

3 - Hyperechoic

Posterior Features

2 - None

Calcifications

1 - None

Final Assessment

3 - Probably benign

Continue, Next Case

Case 35 of 70




Imaging

+

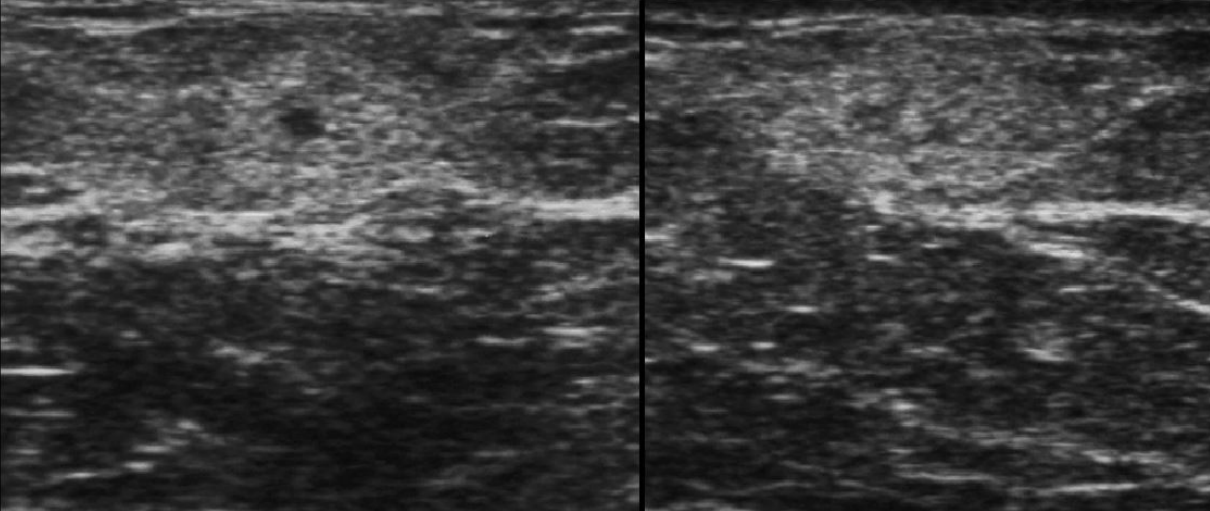
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Fit



Next Case

This 40 year-old woman had a 9mm palpable mass which was predominantly hyperechoic with a tiny cystic component. In the setting of trauma, this is consistent with fat necrosis, though follow-up is appropriate to exclude an underlying mass that bled. BIRADS 3, probably benign. This resolved.



Special Case

9 - Not a special case

Shape

4 - Irregular

Margins

3 - Not circumscribed

Orientation

3 - Not Parallel (includes round)

Continue, Next Case

Echogenicity

5 - Hypoechoic

Posterior Features

3 - Enhancement

Calcifications

1 - None

Final Assessment

7 - Highly suggestive of malignancy

Case 36 of 70





Imaging

+

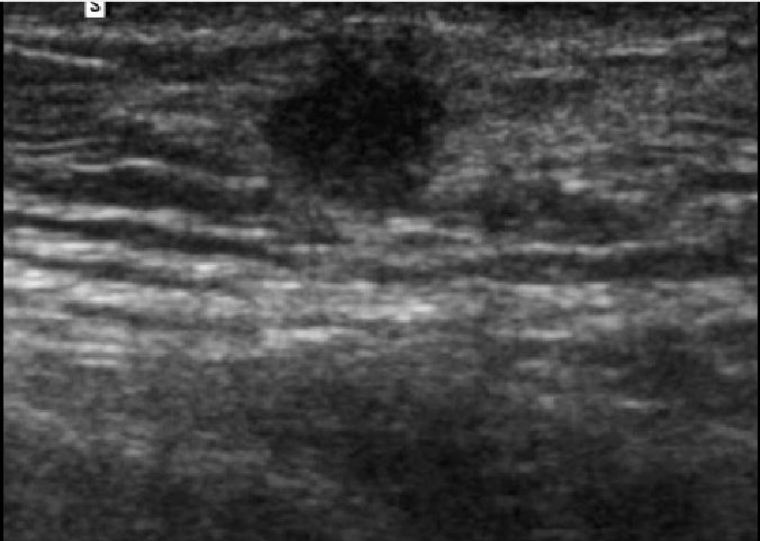
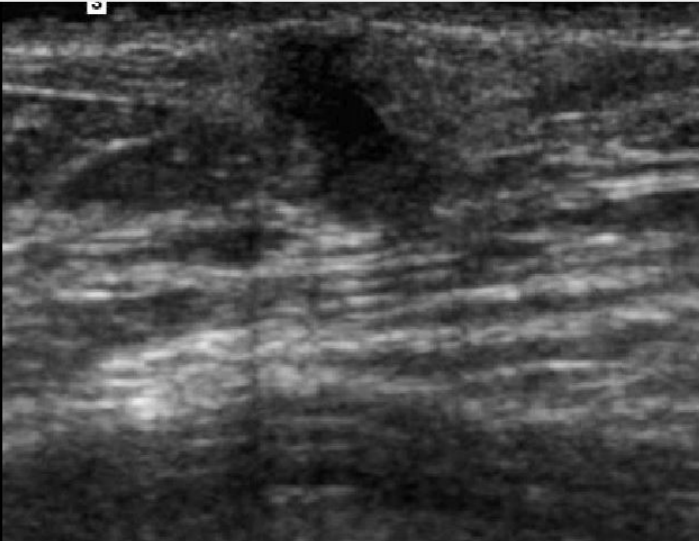
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Fit



Next Case

This 37 year-old woman had a 7mm palpable, irregular, hypoechoic, vertically-oriented mass that was a malignant IDC grade I proven by bx. BIRADS 5, highly suggestive of malignancy.





Case 37 of 70

53%

Imaging

+

-

Fit



Next

This 38 year-old woman had a 10mm nonpalpable mass of clustered microcysts compatible with benign fibrocystic changes (FCC) with or without apocrine metaplasia (AM), decreased on 2 year f/u. BIRADS 3, probably benign.

Special Case

4 - Clustered Microcysts

Shape

0 - Special Case

Margins

0 - Special Case

Orientation

0 - Special Case

Continue, Next Case

Echogenicity

0 - Special Case

Posterior Features

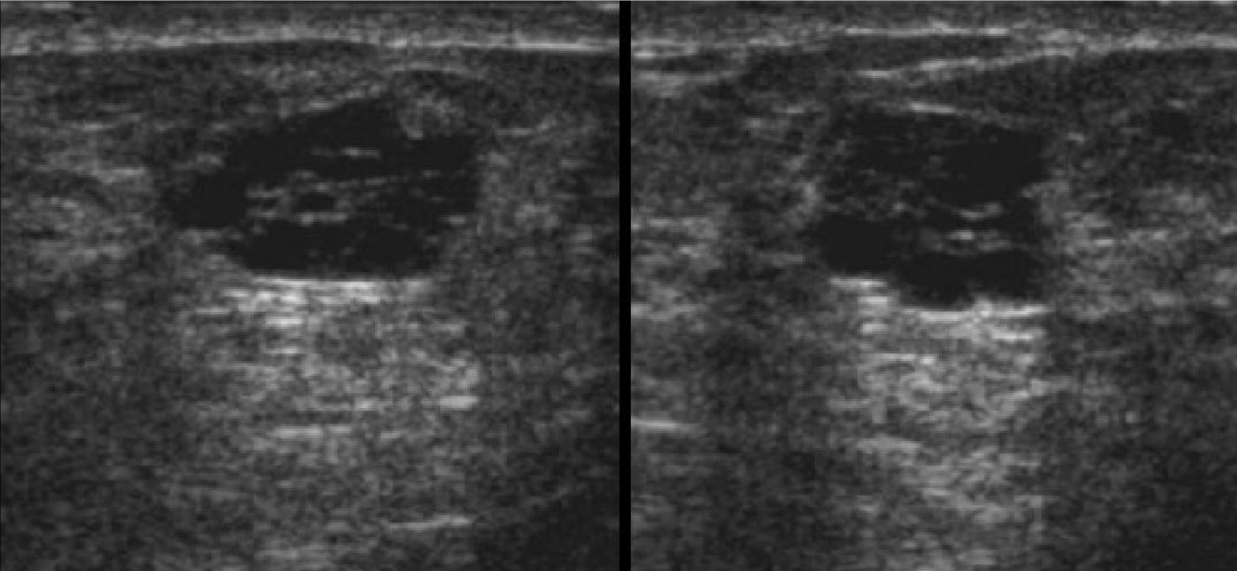
3 - Enhancement

Calcifications

1 - None

Final Assessment

3 - Probably benign



Special Case

9 - Not a special case

Shape

4 - Irregular

Margins

3 - Not circumscribed

Orientation

2 - Parallel

Echogenicity

5 - Hypoechoic

Posterior Features

2 - None

Calcifications

3 - Microcalcifications in a mass

Final Assessment

6 - 4C Moderate Suspicion, biopsy

Continue, Next Case

Case 38 of 70

54%

Imaging

+

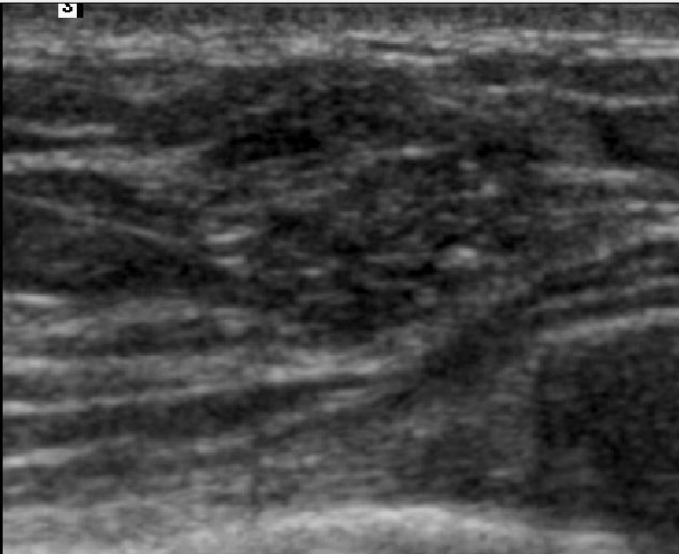
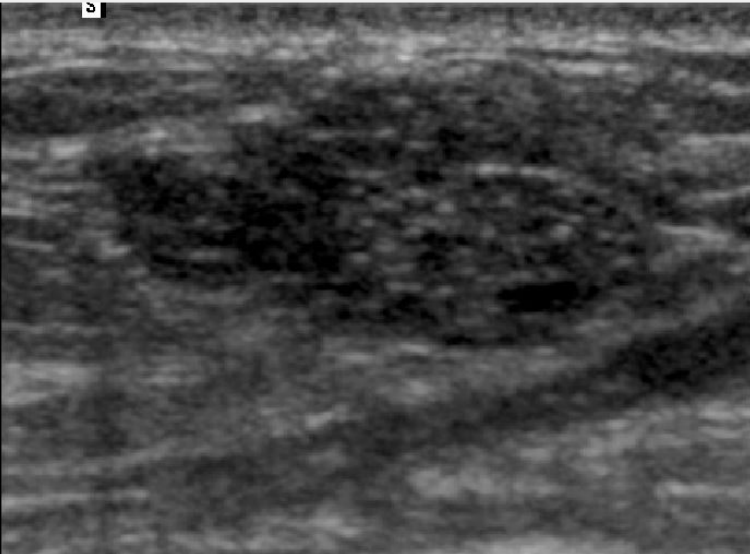
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Fit

0

Next Case

This 28 year-old woman had a 14mm nonpalpable microlobulated, hypoechoic mass containing microcalcifications that was a malignant, DCIS, proven by bx. BIRADS 4C, moderate suspicion.



Special Case

2 - Cyst

Shape

0 - Special Case

Margins

0 - Special Case

Orientation

0 - Special Case

Echogenicity

0 - Special Case

Posterior Features

0 - Special Case

Calcifications

1 - None

Final Assessment

2 - Benign

Continue, Next Case

Case 39 of 70

56%

Imaging

+

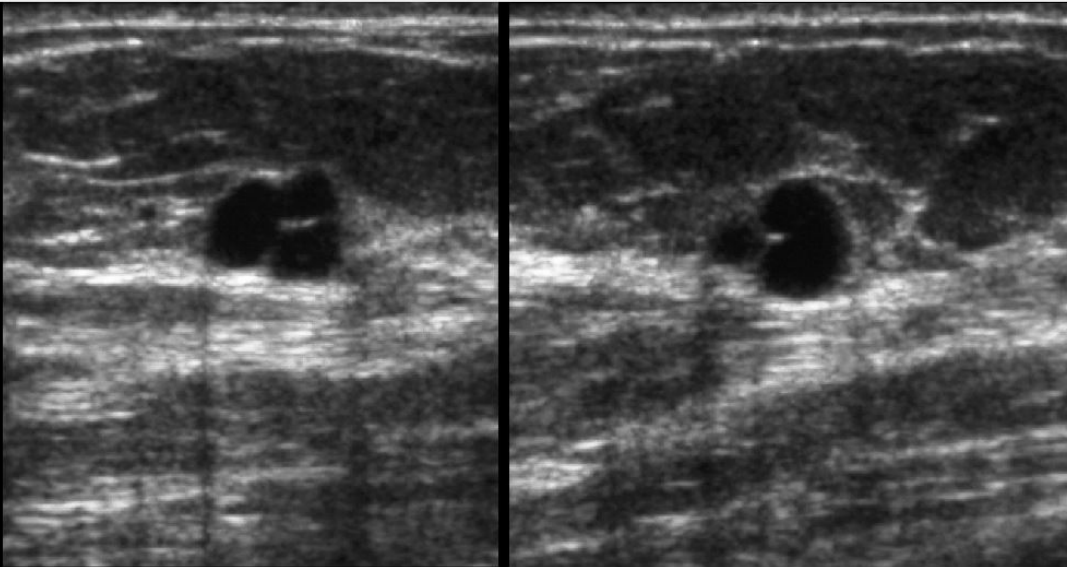
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Fit

o

Next Case

Two adjacent cysts in a 47 year-old woman, a benign finding, BIRADS 2.



Special Case

9 - Not a special case

Shape

2 - Oval or Gently Lobulated

Margins

2 - Circumscribed

Orientation

2 - Parallel

Echogenicity

5 - Hypoechoic

Posterior Features

2 - None

Calcifications

1 - None

Final Assessment

3 - Probably benign

Continue, Next Case

Case 40 of 70


57%

Imaging

+

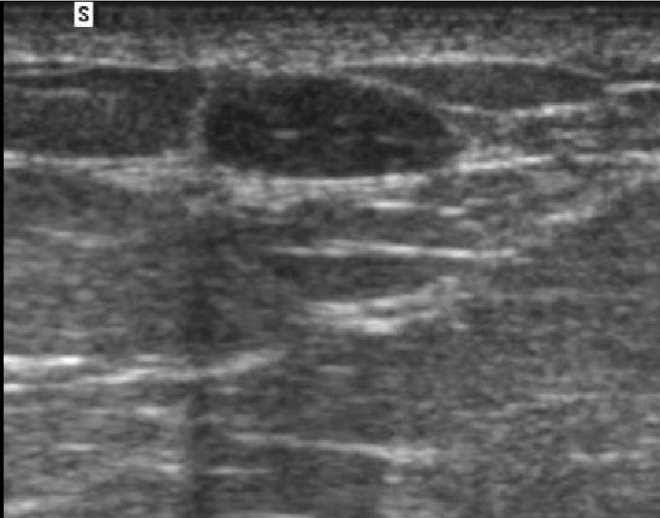
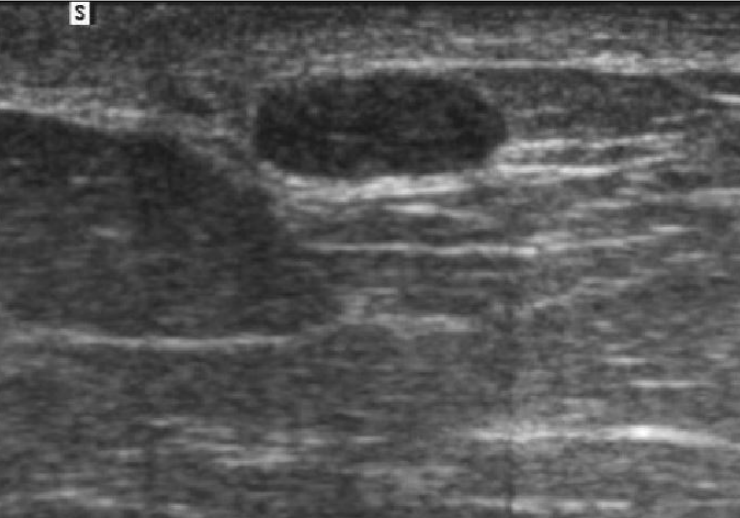
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Fit



Next Case

This 36 year-old woman had an 8 mm nonpalpable, circumscribed, oval, parallel, hypoechoic mass with no posterior features. BIRADS 3, probably benign. Because it enlarged on follow-up, it was biopsied, showing FA.



**Special Case**  
3 - Complicated Cyst

**Shape**  
0 - Special Case

**Margins**  
0 - Special Case

**Orientation**  
0 - Special Case

**Echogenicity**  
0 - Special Case

**Posterior Features**  
3 - Enhancement

**Calcifications**  
1 - None

**Final Assessment**  
2 - Benign

Continue, Next Case

Case 41 of 70

59%

Imaging

+

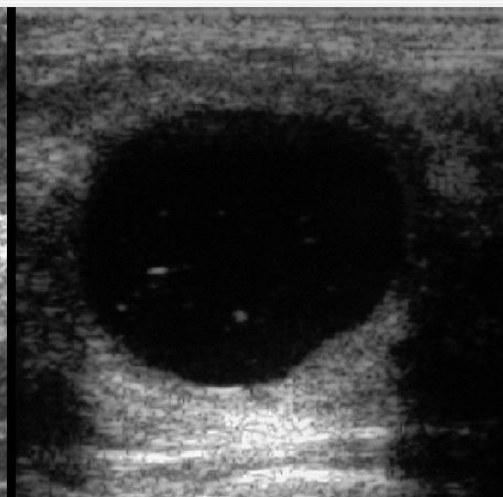
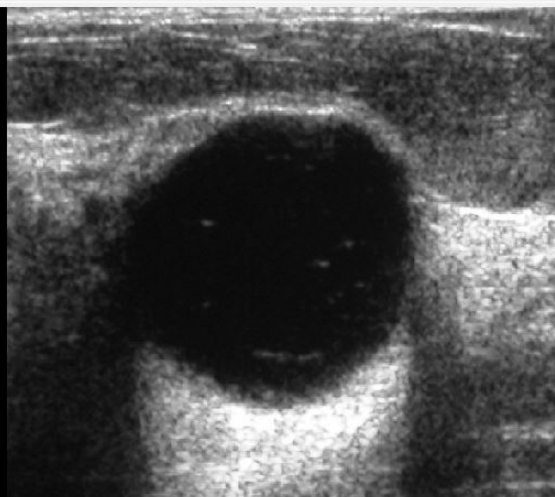
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Fit



Next Case

This 55 year-old woman had an 11mm nonpalpable mass that was a benign complicated cyst proven by f/u. If the internal echoes are seen to move on real-time evaluation, such a complicated cyst can be dismissed as benign, BIRADS 2.





Special Case

9 - Not a special case

Shape

2 - Oval or Gently Lobulated

Margins

2 - Circumscribed

Orientation

2 - Parallel

Echogenicity

3 - Hyperechoic

Posterior Features

2 - None

Calcifications

1 - None

Final Assessment

2 - Benign

Continue, Next Case

Case 42 of 70

60%

Imaging

+

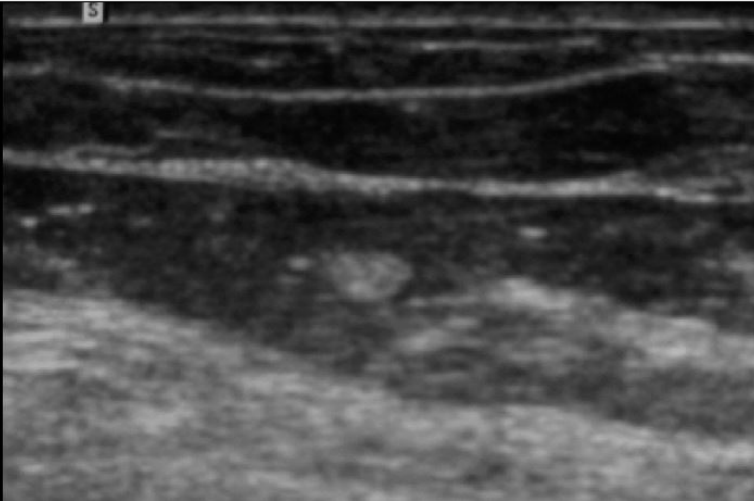
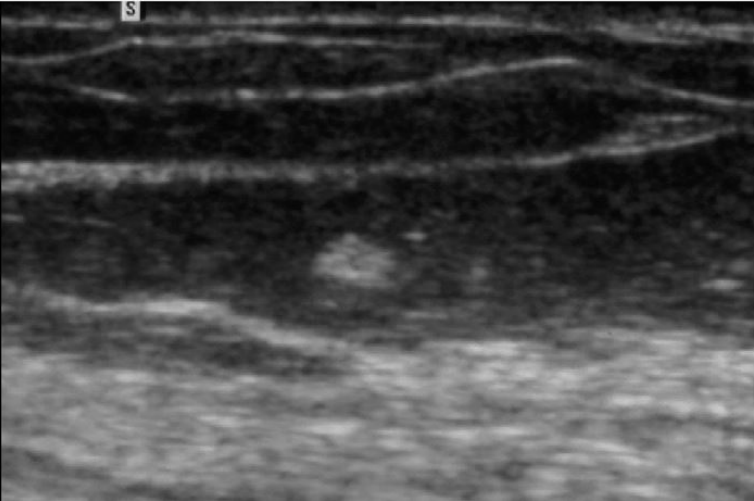
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Fit

0

Next Case

An incidental 3 mm uniformly hyperechoic area, such as in this 52 year-old woman, is a benign finding, BIRADS 2, and can be due to focal fibrosis.



### Special Case

3 - Complicated Cyst

### Shape

2 - Oval or Gently Lobulated

### Margins

2 - Circumscribed

### Orientation

2 - Parallel

### Echogenicity

5 - Hypoechoic

### Posterior Features

3 - Enhancement

### Calcifications

1 - None

### Final Assessment

3 - Probably benign

Continue, Next Case

### Case 43 of 70

61%

Imaging

+

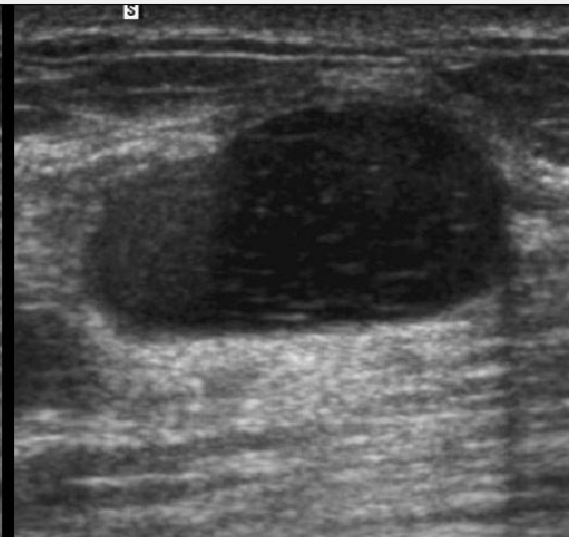
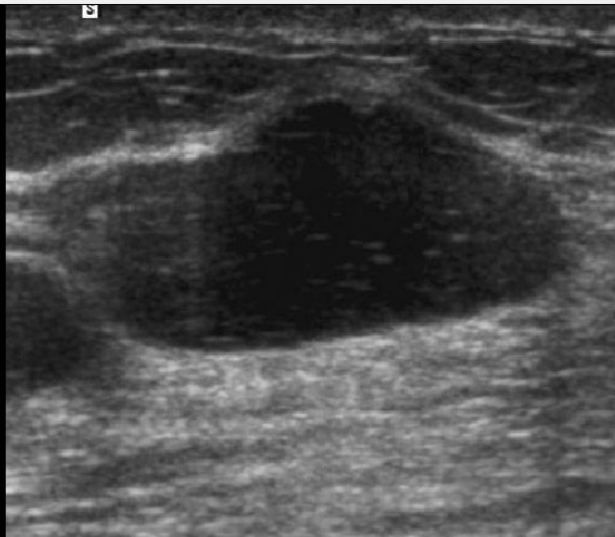
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Fit



Next Case

This 49 year-old woman had a 21mm palpable mass that was a benign complicated cyst proven by f/u. If the internal echoes are seen to move on real-time evaluation, such a complicated cyst can be dismissed as benign, BIRADS 2. If abscess is suspected clinically, aspiration would be appropriate (resulting in BIRADS 4A assessment).



Special Case

7 - Lymph Node

Shape

2 - Oval or Gently Lobulated

Margins

2 - Circumscribed

Orientation

2 - Parallel

Continue, Next Case

Echogenicity

7 - Mixed hyper- and hypoechoic

Posterior Features

2 - None

Calcifications

1 - None

Final Assessment

2 - Benign

Case 44 of 70

63%

Imaging

+

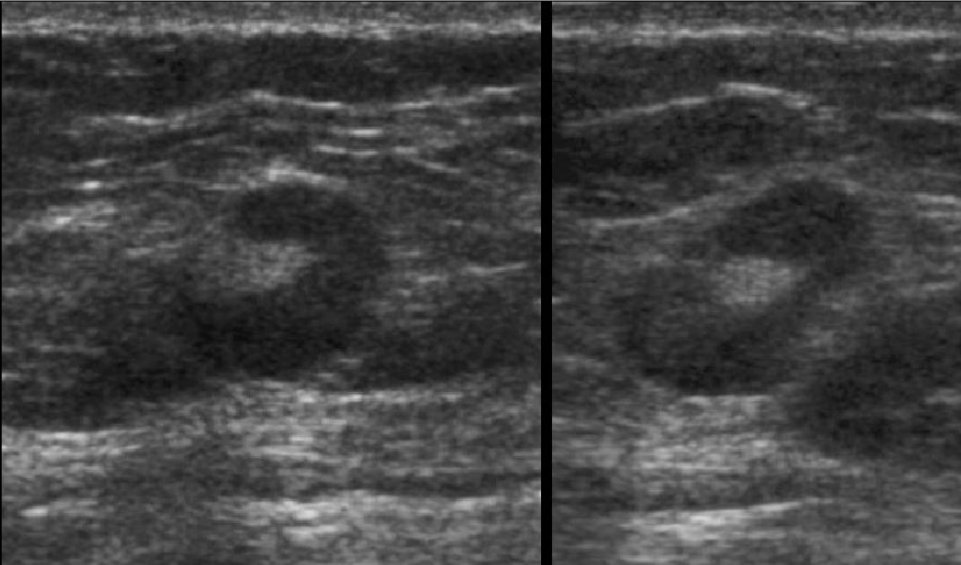
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Fit



Next Case

This 50 year-old woman had a 9mm nonpalpable mass that was a benign lymph node proven by f/u. The final assessment of a lymph node with a thickened cortex depends on the clinical context. This patient had HIV: this was considered BIRADS 2, benign, and was stable on follow-up.



Special Case

9 - Not a special case

Shape

4 - Irregular

Margins

3 - Not circumscribed

Orientation

2 - Parallel

Echogenicity

7 - Mixed hyper- and hypoechoic

Posterior Features

3 - Enhancement

Calcifications

1 - None

Final Assessment

5 - 4B Intermediate Suspicion, biopsy

Continue, Next Case

Case 45 of 70

64%

Imaging

+

-

Fit



Next Case

This 78 year-old woman had a 17mm palpable microlobulated hypoechoic mass with posterior enhancement that was a malignant colloid carcinoma (IDC grade I) proven by bx. BIRADS 4B, intermediate suspicion.

S

S

Special Case

9 - Not a special case

Shape

2 - Oval or Gently Lobulated

Margins

3 - Not circumscribed

Orientation

2 - Parallel

Echogenicity

5 - Hypoechoic

Posterior Features

3 - Enhancement

Calcifications

1 - None

Final Assessment

5 - 4B Intermediate Suspicion, biopsy

Continue, Next Case

Case 46 of 70





Imaging

+

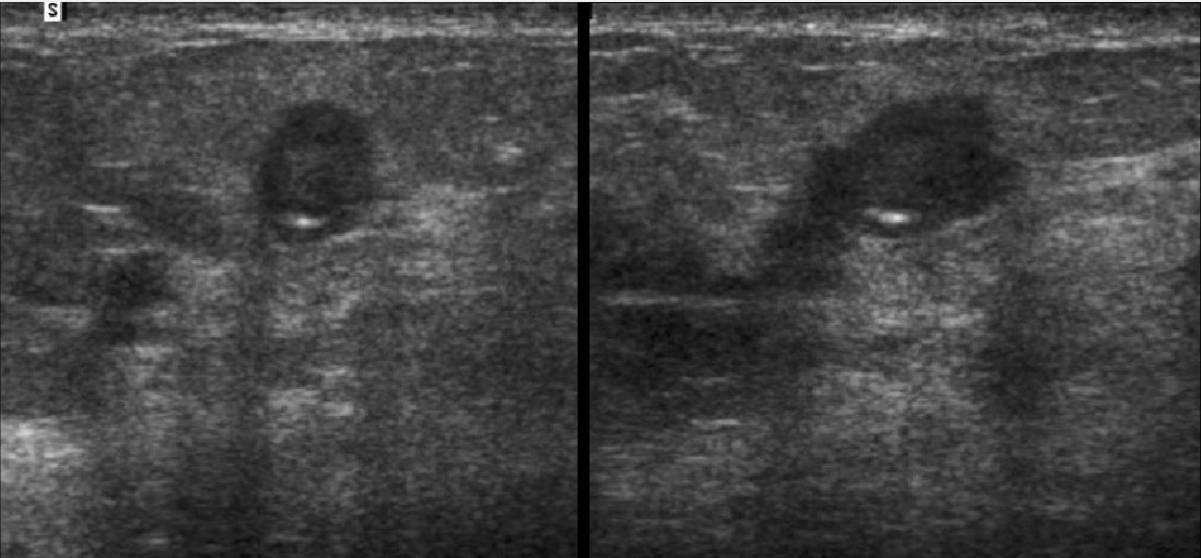
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Fit



Next Case

This 40 year-old woman had an 11mm palpable oval, partially circumscribed, partially indistinctly marginated hypoechoic mass with a macrocalcification. Biopsy showed malignant IDC grade II with an extensive intraductal component. BIRADS 4B, intermediate suspicion.





Special Case

9 - Not a special case

Shape

2 - Oval or Gently Lobulated

Margins

3 - Not circumscribed

Orientation

2 - Parallel

Echogenicity

5 - Hypoechoic

Posterior Features

4 - Shadowing

Calcifications

2 - Macrocalcifications ( $\geq 0.5$  mm)

Final Assessment

5 - 4B Intermediate Suspicion, biopsy

Continue, Next Case

Case 47 of 70

67%

Imaging

+

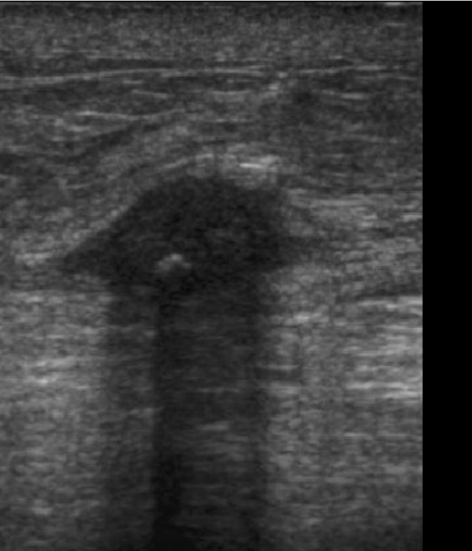
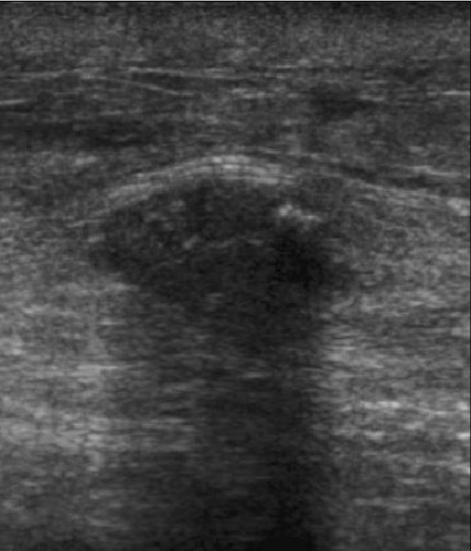
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Fit



Next Case

This 60 year-old woman had a 12mm nonpalpable mass that was a benign FA with popcorn calcifications on mammography. BIRADS 4B, intermediate suspicion on ultrasound alone. When integrated with the mammogram, this would be BIRADS 2, benign.



Special Case

9 - Not a special case

Shape

4 - Irregular

Margins

3 - Not circumscribed

Orientation

2 - Parallel

Echogenicity

5 - Hypoechoic

Posterior Features

4 - Shadowing

Calcifications

1 - None

Final Assessment

7 - Highly suggestive of malignancy

Continue, Next Case

Case 48 of 70

69%

Imaging

+

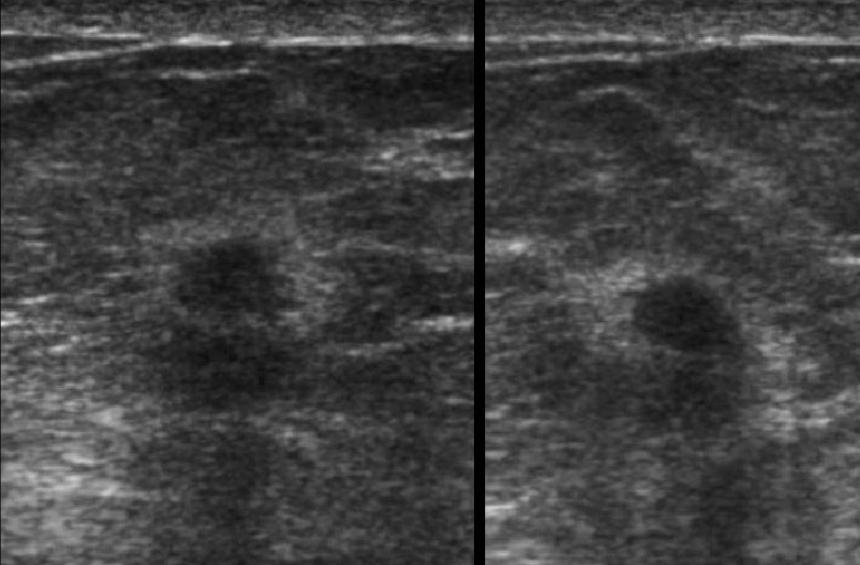
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Fit



Next Case

This 31 year-old woman had a 6mm nonpalpable spiculated mass with an echogenic halo that was a malignant IDC gr I proven by bx. BIRADS 5, highly suggestive of malignancy.



Special Case

9 - Not a special case

Shape

2 - Oval or Gently Lobulated

Margins

3 - Not circumscribed

Orientation

2 - Parallel

Echogenicity

6 - Isoechoic

Posterior Features

2 - None

Calcifications

3 - Microcalcifications in a mass

Final Assessment

5 - 4B Intermediate Suspicion, biopsy

Continue, Next Case

Case 49 of 70

70%

Imaging

+

-

Fit

0

Next Case

This 41 year-old woman had an 11mm nonpalpable, isoechoic, microlobulated mass containing microcalcifications that was a benign FA proven by bx. BIRADS 4B, intermediate suspicion.

S

S

Special Case

9 - Not a special case

Shape

2 - Oval or Gently Lobulated

Margins

3 - Not circumscribed

Orientation

2 - Parallel

Echogenicity

5 - Hypoechoic

Posterior Features

3 - Enhancement

Calcifications

3 - Microcalcifications in a mass

Final Assessment

5 - 4B Intermediate Suspicion, biopsy

Continue, Next Case

Case 50 of 70

71%

Imaging

+

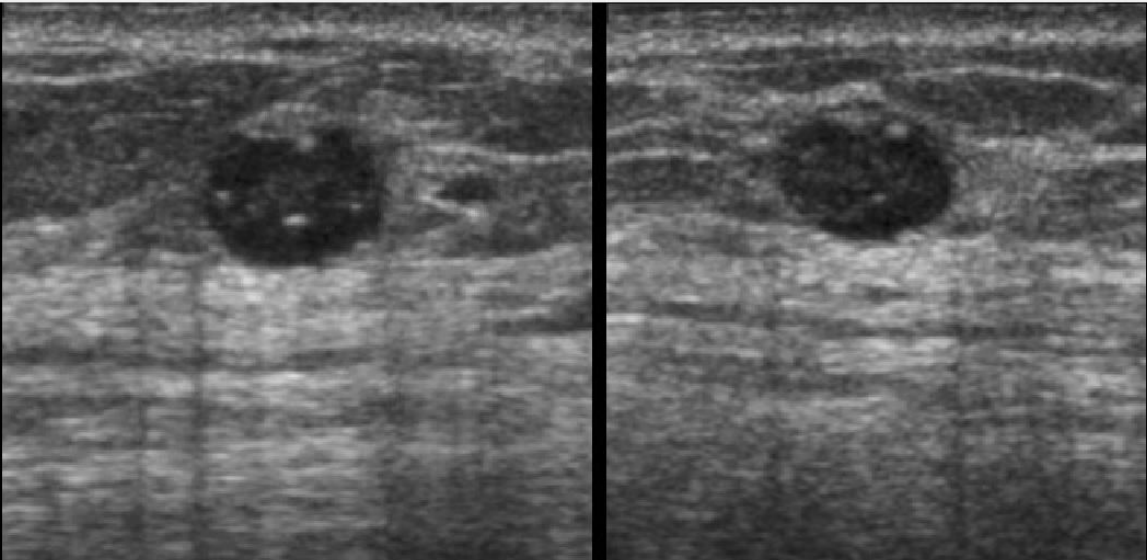
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Fit



Next Case

This 74 year-old woman had an 8mm nonpalpable microlobulated mass containing microcalcifications that was a malignant intramammary lymph node, metastatic IDC proven by bx. A subtle residual fatty hilum is seen eccentrically in the superficial aspect of the mass. BIRADS 4B, intermediate suspicion.



**Special Case**  
5 - Intraductal Mass

**Shape**  
0 - Special Case

**Margins**  
0 - Special Case

**Orientation**  
0 - Special Case

**Echogenicity**  
0 - Special Case

**Posterior Features**  
0 - Special Case

**Calcifications**  
1 - None

**Final Assessment**  
4 - 4A Low suspicion, biopsy

Continue, Next Case

Case 51 of 70



Imaging

+

-

Fit

Next Case

This 41 year-old woman had an 8mm nonpalpable intraductal mass that was a benign papilloma proven by bx. BIRADS 4A, low suspicion.





Special Case

9 - Not a special case

Shape

4 - Irregular

Margins

3 - Not circumscribed

Orientation

3 - Not Parallel (includes round)

Continue, Next Case

Echogenicity

5 - Hypoechoic

Posterior Features

4 - Shadowing

Calcifications

1 - None

Final Assessment

7 - Highly suggestive of malignancy

Case 52 of 70

74%

Imaging

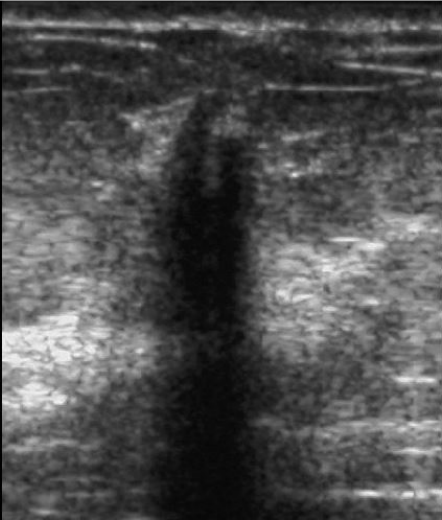
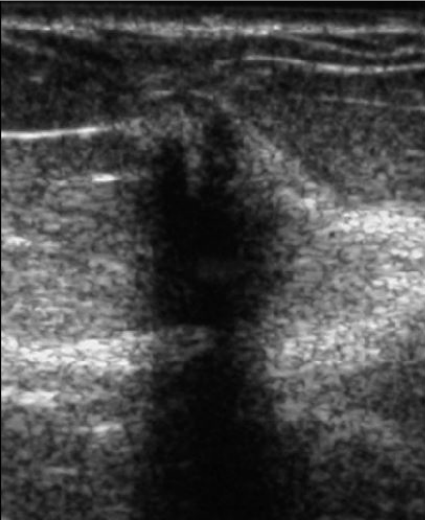
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Fit

Next Case

This 46 year-old woman had an 8mm palpable mass that was a benign granular cell tumor proven by bx. BIRADS 5, highly suggestive of malignancy. Wide local excision is preferred for such tumors which are usually benign.



**Special Case**  
9 - Not a special case

**Shape**  
4 - Irregular

**Margins**  
3 - Not circumscribed

**Orientation**  
3 - Not Parallel (includes round)

Continue, Next Case

**Echogenicity**  
5 - Hypoechoic

**Posterior Features**  
4 - Shadowing

**Calcifications**  
1 - None

**Final Assessment**  
7 - Highly suggestive of malignancy

Case 53 of 70

76%

Imaging

+

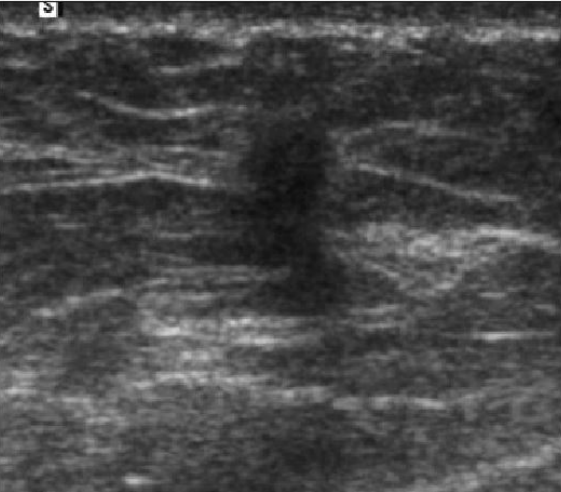
-

Fit



Next Case

This 59 year-old woman had a 5mm nonpalpable spiculated mass with associated architectural distortion that was a malignant IDC grade I proven by bx. BIRADS 5, highly suggestive of malignancy.



Special Case

6 - Mass in or on skin

Shape

2 - Oval or Gently Lobulated

Margins

2 - Circumscribed

Orientation

2 - Parallel

Echogenicity

5 - Hypoechoic

Posterior Features

3 - Enhancement

Calcifications

1 - None

Final Assessment

2 - Benign

Continue, Next Case

Case 54 of 70

77%

Imaging

+

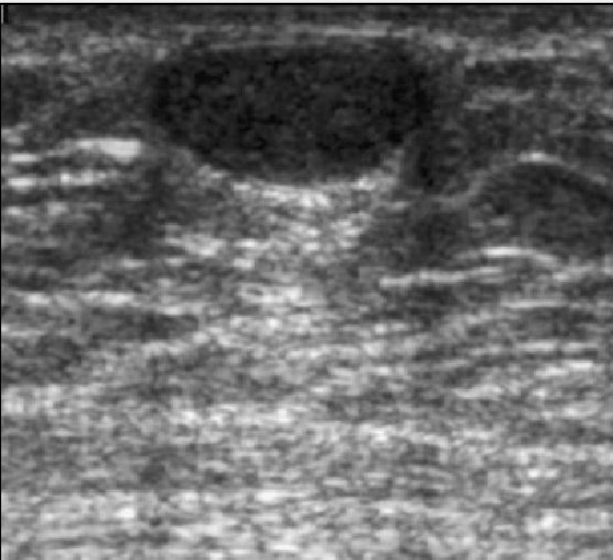
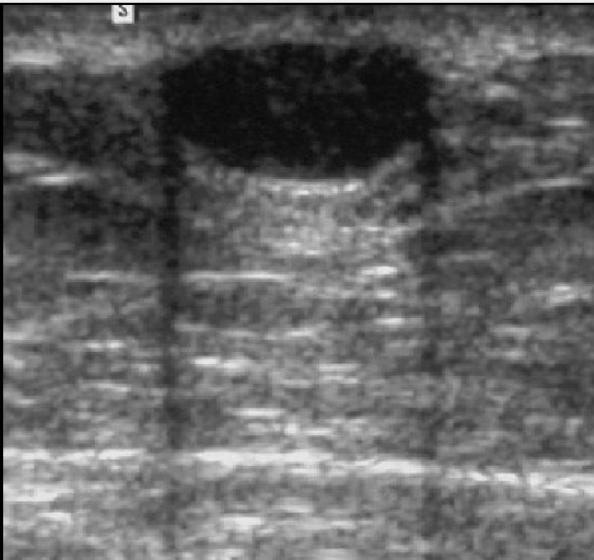
-

Fit



Next Case

This 44 year-old woman had a 10mm palpable mass within the skin due to a benign epidermal inclusion cyst. BIRADS 2, benign finding.



Special Case

5 - Intraductal Mass

Shape

0 - Special Case

Margins

0 - Special Case

Orientation

0 - Special Case

Echogenicity

0 - Special Case

Posterior Features

0 - Special Case

Calcifications

1 - None

Final Assessment

4 - 4A Low suspicion, biopsy

Continue, Next Case

Case 55 of 70

79%

Imaging

+

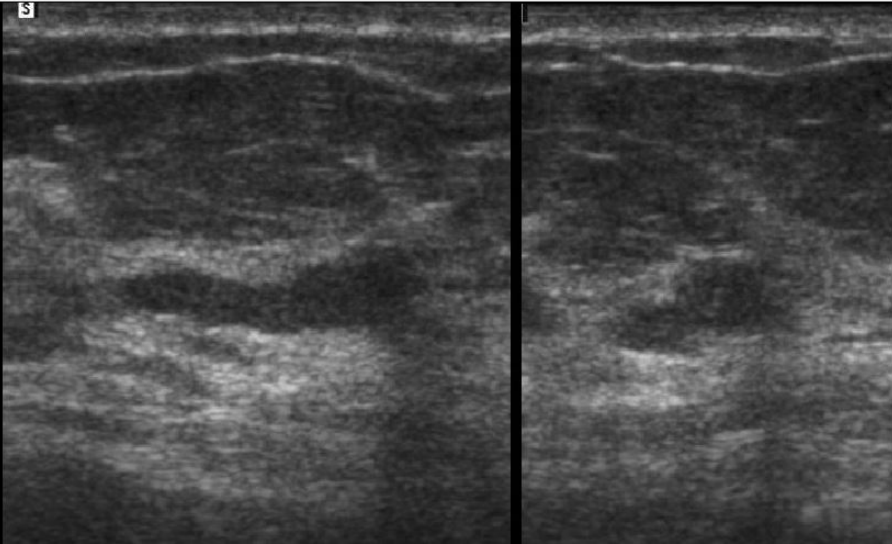
-

Fit



Next Case

This 58 year-old woman had a(n) 14mm nonpalpable tubular isoechoic mass that was a benign papilloma proven by bx. BIRADS 4A, low suspicion.



Special Case

9 - Not a special case

Shape

2 - Oval or Gently Lobulated

Margins

3 - Not circumscribed

Orientation

2 - Parallel

Echogenicity

5 - Hypoechoic

Posterior Features

3 - Enhancement

Calcifications

1 - None

Final Assessment

5 - 4B Intermediate Suspicion, biopsy

Continue, Next Case

Case 56 of 70

80%

Imaging

+

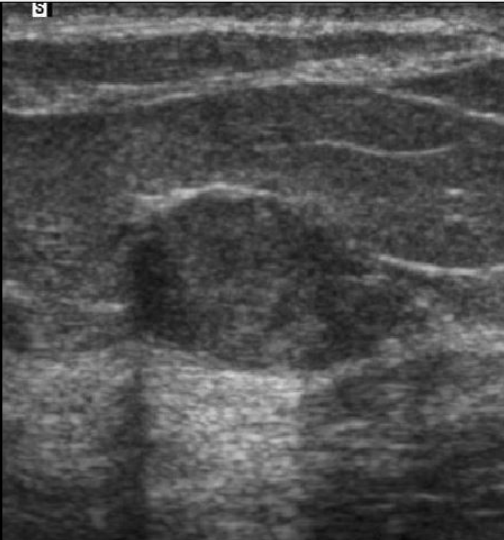
-

Fit

○

Next Case

This nonpalpable 14 mm hypoechoic, oval mass with posterior enhancement shows mostly circumscribed but partially indistinct and partially microlobulated borders. Tiny eccentric cystic areas are also noted. 71 year-old with biopsy proven fibroadenoma with DCIS within it. BIRADS 4B, intermediate suspicion.





Special Case

9 - Not a special case

Shape

2 - Oval or Gently Lobulated

Margins

3 - Not circumscribed

Orientation

2 - Parallel

Continue, Next Case

Echogenicity

4 - Complex (cystic and solid)

Posterior Features

3 - Enhancement

Calcifications

1 - None

Final Assessment

4 - 4A Low suspicion, biopsy

Case 57 of 70





Imaging

+

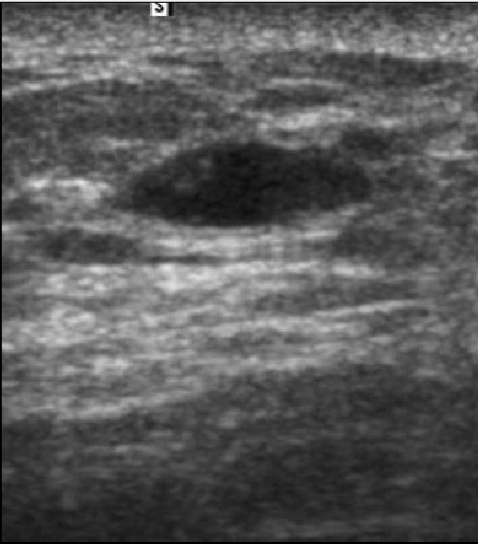
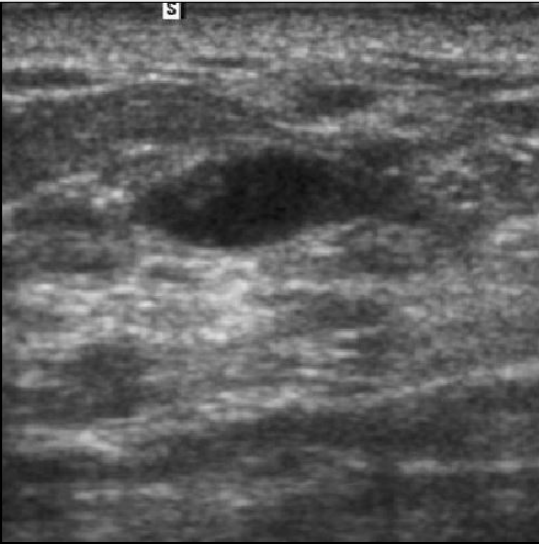
—

Fit



Next Case

This 44 year-old had a history of papillomas. Within this nonpalpable ovoid cyst is a 2 mm intracystic mass (making this lesion a complex cystic and solid mass) which proved to be a benign papilloma on biopsy. BIRADS 4A, low suspicion.



Special Case

7 - Lymph Node

Shape

0 - Special Case

Margins

0 - Special Case

Orientation

0 - Special Case

Echogenicity

0 - Special Case

Posterior Features

0 - Special Case

Calcifications

1 - None

Final Assessment

2 - Benign

Continue, Next Case

Case 58 of 70

83%

Imaging

+

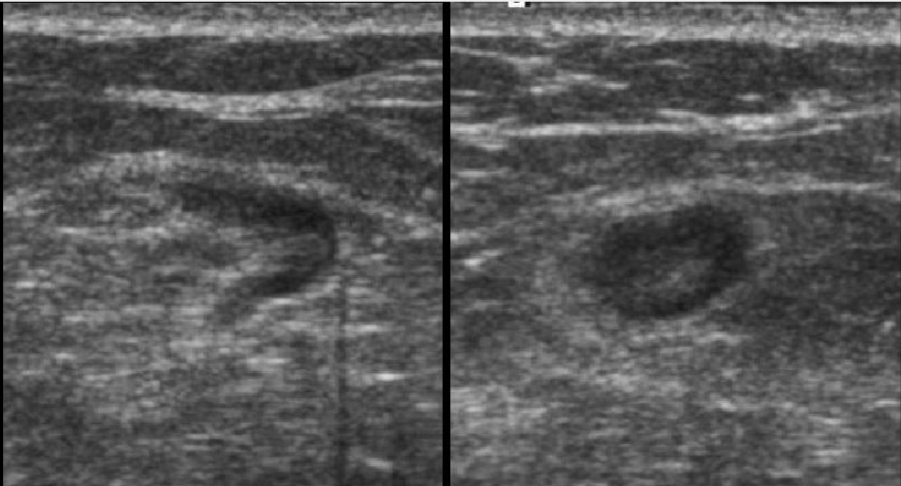
-

Fit



Next Case

This 66 year-old woman had a 9mm nonpalpable mass that was a benign intramammary lymph node ipsilateral to cancer, proven benign at mastectomy. BIRADS 2, benign finding.



Special Case

9 - Not a special case

Shape

4 - Irregular

Margins

3 - Not circumscribed

Orientation

2 - Parallel

Echogenicity

7 - Mixed hyper- and hypoechoic

Posterior Features

5 - Combined shadowing and enhancement

Calcifications

3 - Microcalcifications in a mass

Final Assessment

6 - 4C Moderate Suspicion, biopsy

Continue, Next Case

Case 59 of 70

84%

Imaging

+

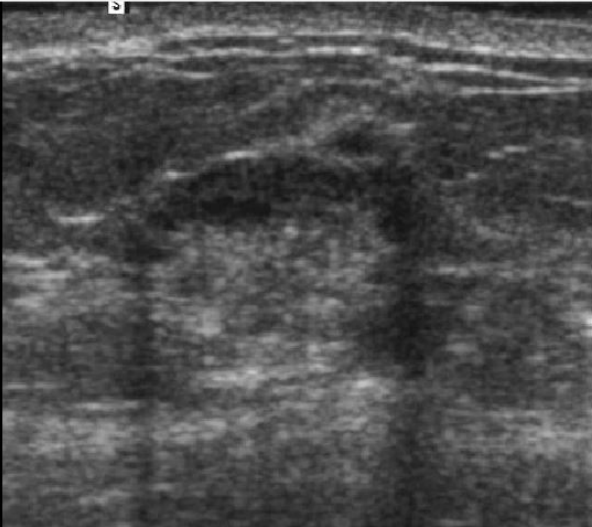
-

Fit

0

Next Case

This 41 year-old woman had a 14mm palpable peripherally hypoechoic and centrally hyperechoic, irregular, microlobulated mass with combined posterior shadowing and enhancement and containing microcalcifications. This proved to be malignant IDC, grade III, on core biopsy. BIRADS 4C, moderate suspicion.



Special Case

1 - No mass

Shape

1 - No mass

Margins

1 - No mass

Orientation

1 - No mass

Echogenicity

3 - Hyperechoic

Posterior Features

1 - No mass

Calcifications

1 - None

Final Assessment

2 - Benign

Continue, Next Case

Case 60 of 70

86%

Imaging

+

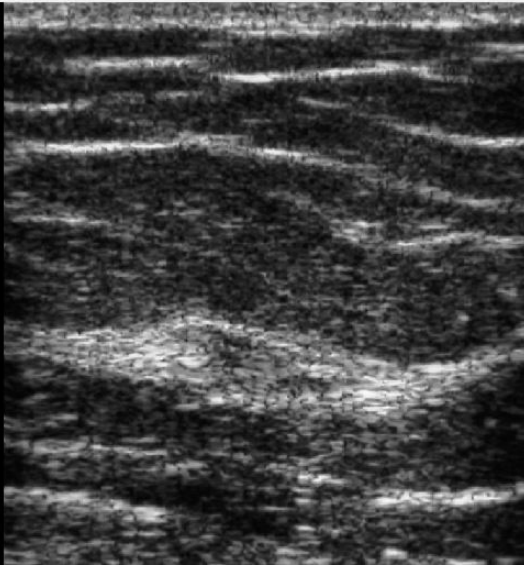
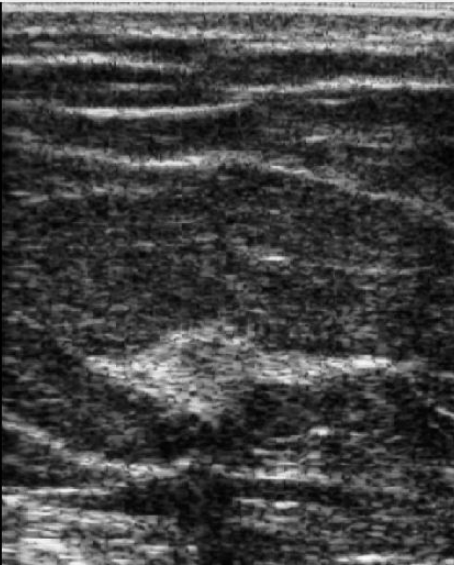
-

Fit

o

Next Case

This 20 mm band-like area of hyperechoic tissue in this 40 year-old woman is a normal variant, usually representing an area of relatively denser or fibrotic tissue. BIRADS 2, benign finding.



Special Case

2 - Cyst

Shape

4 - Irregular

Margins

1 - No mass

Orientation

2 - Parallel

Echogenicity

2 - Anechoic

Posterior Features

3 - Enhancement

Calcifications

1 - None

Final Assessment

2 - Benign

Continue, Next Case

Case 61 of 70

87%

Imaging

+

-

Fit

0

Next Case

This 41 year-old woman had a 10 mm nonpalpable microlobulated anechoic mass with posterior enhancement due to a cyst, a benign finding, BIRADS 2.





Special Case

1 - No mass

Shape

1 - No mass

Margins

1 - No mass

Orientation

1 - No mass

Echogenicity

1 - No mass

Posterior Features

1 - No mass

Calcifications

4 - Microcalcifications outside a mass

Final Assessment

4 - 4A. Low suspicion, biopsy

Continue, Next Case

Case 62 of 70

89%

Imaging

+

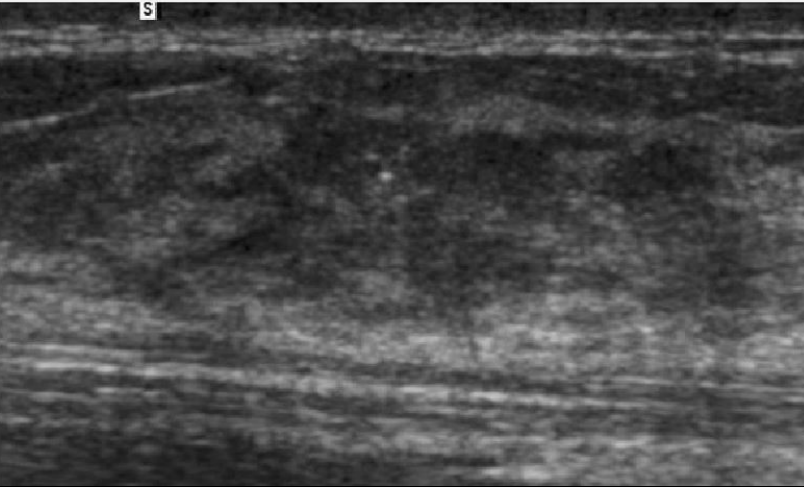
-

Fit

0

Next Case

This is a difficult case on ultrasound, with isolated microcalcifications in background of heterogeneous echotexture in this 58 year-old woman. Truly such a case cannot be adequately assessed by ultrasound alone and would in practice be BIRADS 0, incomplete, with mammogram required. These calcifications were biopsied under ultrasound guidance showing fibrocystic changes.



Special Case

2 - Cyst

Shape

3 - Round

Margins

2 - Circumscribed

Orientation

3 - Not Parallel (includes round)

Echogenicity

4 - Complex (cystic and solid)

Posterior Features

3 - Enhancement

Calcifications

3 - Microcalcifications in a mass

Final Assessment

3 - Probably benign

Continue, Next Case

Case 63 of 70

90%

Imaging

+

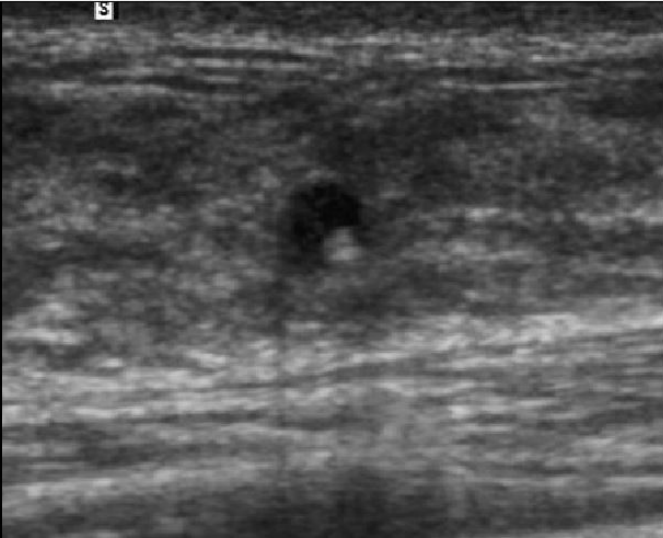
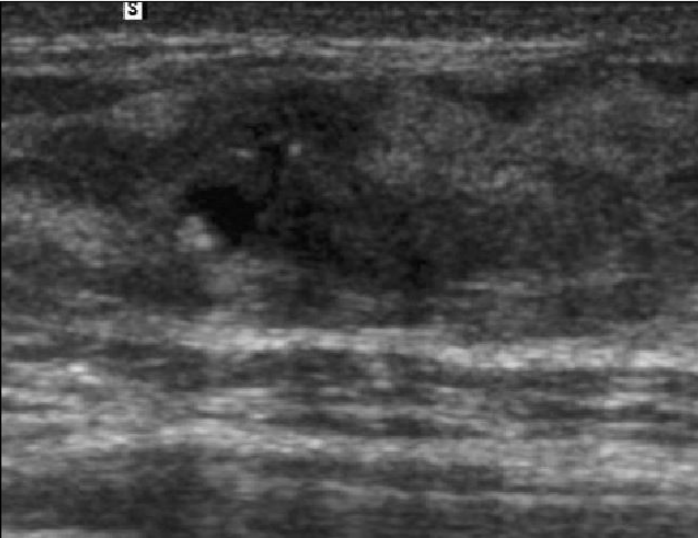
-

Fit



Next Case

This 58 year-old woman had a 3mm nonpalpable mass. This is a challenging case by ultrasound. The lesion is a cyst containing a few dependent microcalcifications, i.e. milk of calcium. As such, this is a probably benign finding on ultrasound, BIRADS 3, though this was more clearly demonstrated as benign on true lateral magnification mammographic view.



**Special Case**  
9 - Not a special case

**Shape**  
4 - Irregular

**Margins**  
3 - Not circumscribed

**Orientation**  
2 - Parallel

**Echogenicity**  
6 - Isoechoic

**Posterior Features**  
2 - None

**Calcifications**  
1 - None

**Final Assessment**  
5 - 4B Intermediate Suspicion, biopsy

Continue, Next Case

Case 64 of 70

91%

Imaging

+

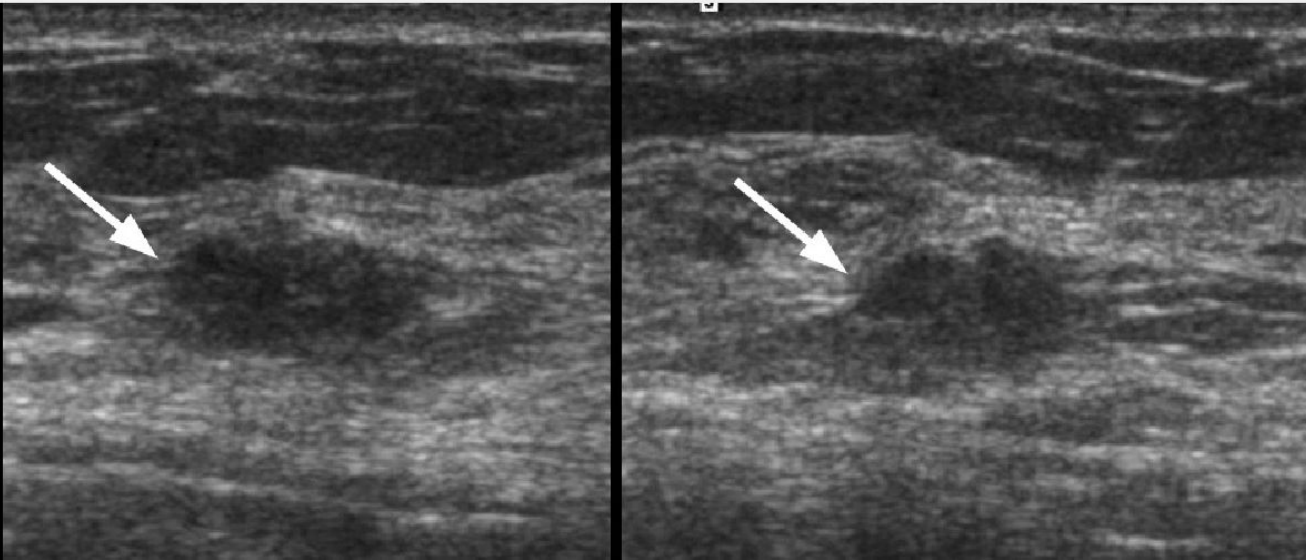
-

Fit



Next Case

This 74 year-old woman had a 13mm nonpalpable mass. This isoechoic mass was quite subtle on sonography, but has indistinct margins and is irregular in shape. As such, it is of intermediate suspicion, BIRADS 4B. Core biopsy showed malignant IDC, grade I.



Special Case

9 - Not a special case

Shape

4 - Irregular

Margins

3 - Not circumscribed

Orientation

3 - Not Parallel (includes round)

Echogenicity

7 - Mixed hyper- and hypoechoic

Posterior Features

4 - Shadowing

Calcifications

3 - Microcalcifications in a mass

Final Assessment

7 - Highly suggestive of malignancy

Continue, Next Case

Case 65 of 70



Imaging

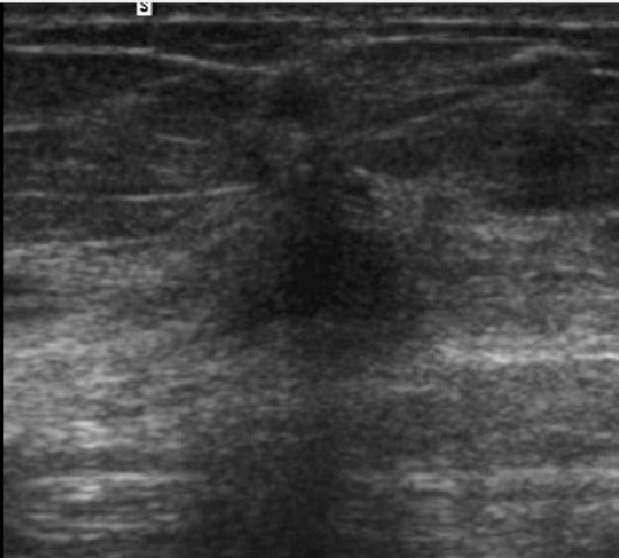
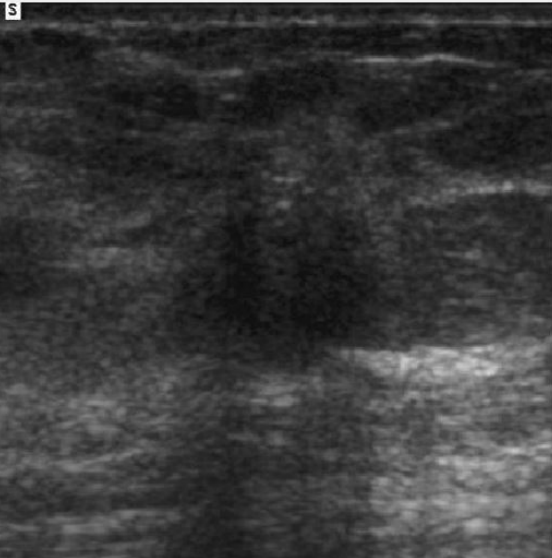
+

-

Fit

Next Case

This 74 year-old woman had an 8mm palpable spiculated mixed hyper- and hypoechoic mass with associated architectural distortion, microcalcifications, and posterior shadowing that was malignant (IDC, grade I with an extensive intraductal component) on biopsy. BIRADS 5, highly suggestive of malignancy.





### Special Case

1 - No mass

### Shape

1 - No mass

### Margins

1 - No mass

### Orientation

1 - No mass

### Echogenicity

1 - No mass

### Posterior Features

2 - None

### Calcifications

4 - Microcalcifications outside a mass

### Final Assessment

5 - 4B Intermediate Suspicion, biopsy

Continue, Next Case

### Case 66 of 70

94%

Imaging

+

-

Fit



Next Case

This is another area of the same breast as in Case 65. Microcalcifications are present without a discrete mass over a 70 mm area in this 74 year-old woman. On the right-hand image, note that the calcifications are within a duct (arrow), which makes the finding of at least intermediate suspicion, BIRADS 4B. This proved to be malignant: micropapillary DCIS with microcalcifications, better seen on magnification mammographic images.

S

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Special Case

6 - Mass in or on skin

Shape

0 - Special Case

Margins

0 - Special Case

Orientation

0 - Special Case

Echogenicity

2 - Anechoic

Posterior Features

2 - None

Calcifications

1 - None

Final Assessment

2 - Benign

Continue, Next Case

Case 67 of 70

96%

Imaging

+

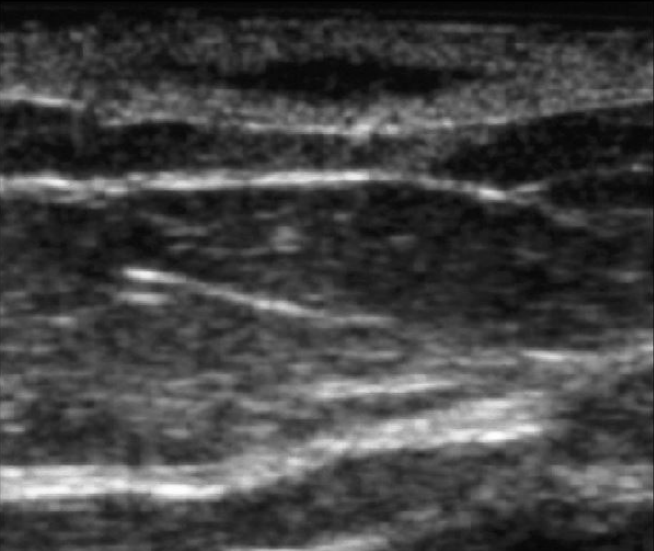
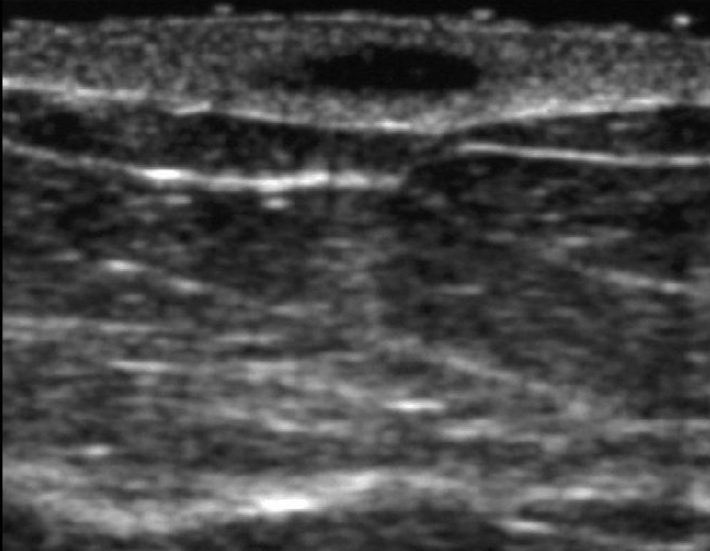
-

Fit

o

Next Case

This 44 year-old woman had a 9mm palpable intradermal mass due to benign sebaceous cyst, BIRADS 2.



Special Case

9 - Not a special case

Shape

2 - Oval or Gently Lobulated

Margins

3 - Not circumscribed

Orientation

2 - Parallel

Continue, Next Case

Echogenicity

5 - Hypoechoic

Posterior Features

2 - None

Calcifications

1 - None

Final Assessment

5 - 4B Intermediate Suspicion, biopsy

Case 68 of 70




Imaging

+

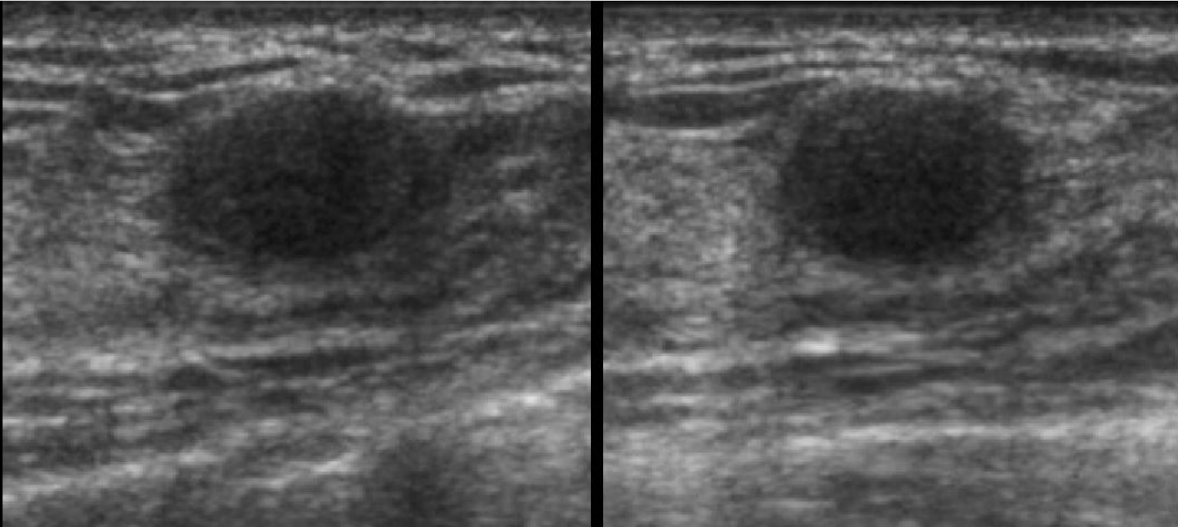
—

Fit



Next Case

This 59 year-old woman had a 9mm nonpalpable ovoid, indistinctly marginated hypoechoic mass with no posterior features, of intermediate suspicion, BIRADS 4B. Core biopsy showed ruptured cyst.



**Special Case**  
3 - Complicated Cyst

**Shape**  
0 - Special Case

**Margins**  
0 - Special Case

**Orientation**  
0 - Special Case

**Echogenicity**  
0 - Special Case

**Posterior Features**  
3 - Enhancement

**Calcifications**  
1 - None

**Final Assessment**  
2 - Benign

Continue, Next Case

Case 69 of 70

99%

Imaging

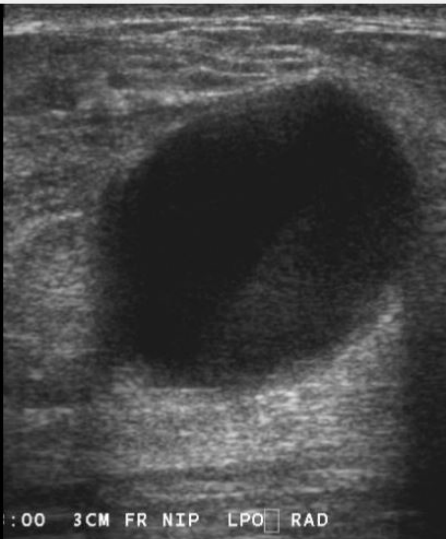
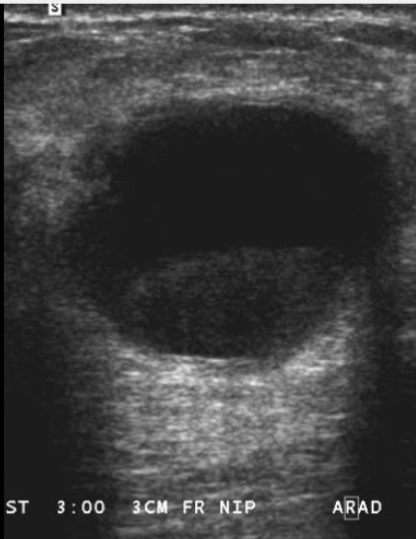
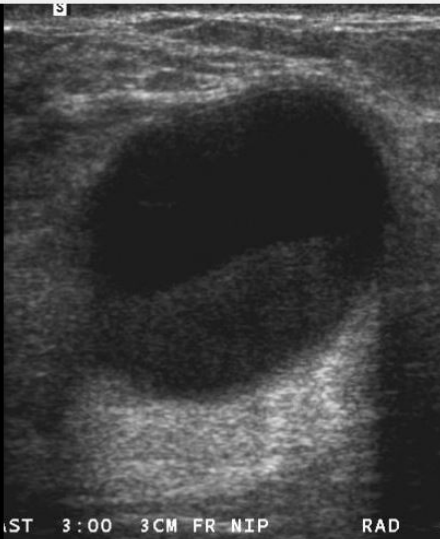


Fit



Next Case

This 43 year-old woman had a 16 mm palpable cyst with internal debris that moves with change in position (with right-hand image obtained in the LPO position). Unless there are symptoms of abscess, which would require aspiration, this would be a benign finding, BIRADS 2.



Special Case

9 - Not a special case

Shape

4 - Irregular

Margins

3 - Not circumscribed

Orientation

3 - Not Parallel (includes round)

Echogenicity

2 - Anechoic

Posterior Features

2 - None

Calcifications

1 - None

Final Assessment

5 - 4B Intermediate Suspicion, biopsy

Continue, Next Case

Case 70 of 70

100%

Imaging

+

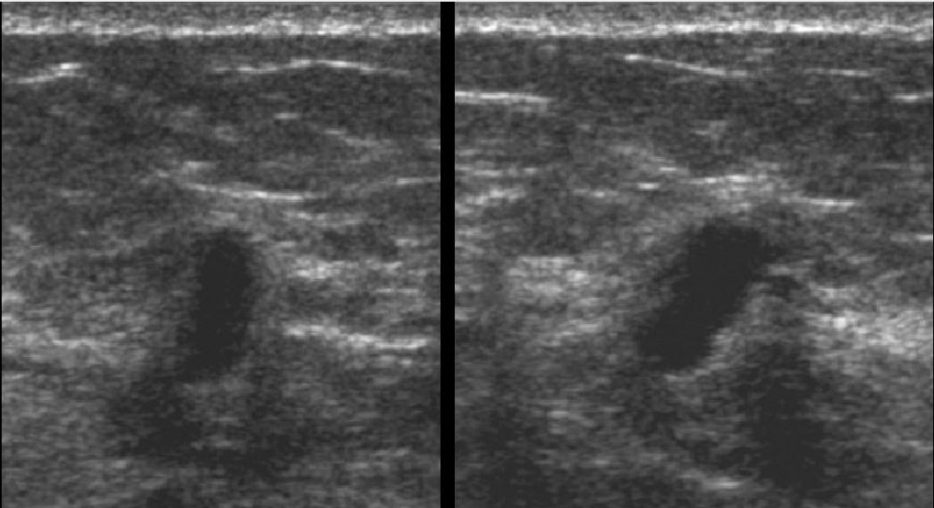
-

Fit



Next Case

This 55 year-old woman had an 8mm nonpalpable vertically-oriented anechoic mass with indistinct margins. This had decreased since prior sonograms and resolved on follow-up and was a resolving cyst, but its sonographic appearance on this study in isolation is of intermediate suspicion, BIRADS 4B.



# Instructions

- For installing CD of interactive quiz
  - Please call TNI head office if you would to obtain a CD of interactive quiz
- Details on how to perform quiz



**Installation instructions:**

For Windows 95/98/ME/2000/NT/XP only

1. Start Windows
2. Set display color depth to 24-bit color or higher (16.7 million colors or higher)
3. Insert CD-ROM
4. Determine the drive letter of you CD-ROM drive, for example "D"
5. Click the "Start" button, then click "Run..."
6. Type "D:\Setup.exe" where "D" is replaced by the drive letter of your CD-ROM drive.
7. Click "OK"
8. Follow the instructions on the screen.

OR

1. – 3. same as above
4. Double click the "My Computer" icon.
5. Double click the CD-ROM drive.
6. Double click the "Setup.exe" icon
7. Follow instructions on screen.

To Start Program

Double click the "acr" icon labeled "ACRIN-Avon 6666 Ultrasound Feature Quiz" on your desktop to start.

**Uninstall instructions:**

1. Click "Start", then click "Settings", then choose "Control Panel"
2. Double click "Add/Remove Programs"
3. Select "ACRIN-Avon 6666 Ultrasound Feature Quiz" and click "Add/Remove". Select "Automatic" uninstall (if the option is available).

## ACRIN-AVON 6666 Ultrasound Quiz

### Purpose:

This quiz is being used to establish performance in:

- Biopsy appropriate lesions (pathology standard and consensus standard)
- NOT biopsying lesions per protocol
- Probably benign lesions per protocol
- Agreement in feature analysis, source of error in interpretation

### General Information:

This quiz consists of 70 total cases. At the beginning of each case, assume the case is not palpable.

Orthogonal views are provided and normals are included in the quiz. When choosing your answer, use the worst applicable descriptor. Final Assessment

Probably Benign Lesions are defined as

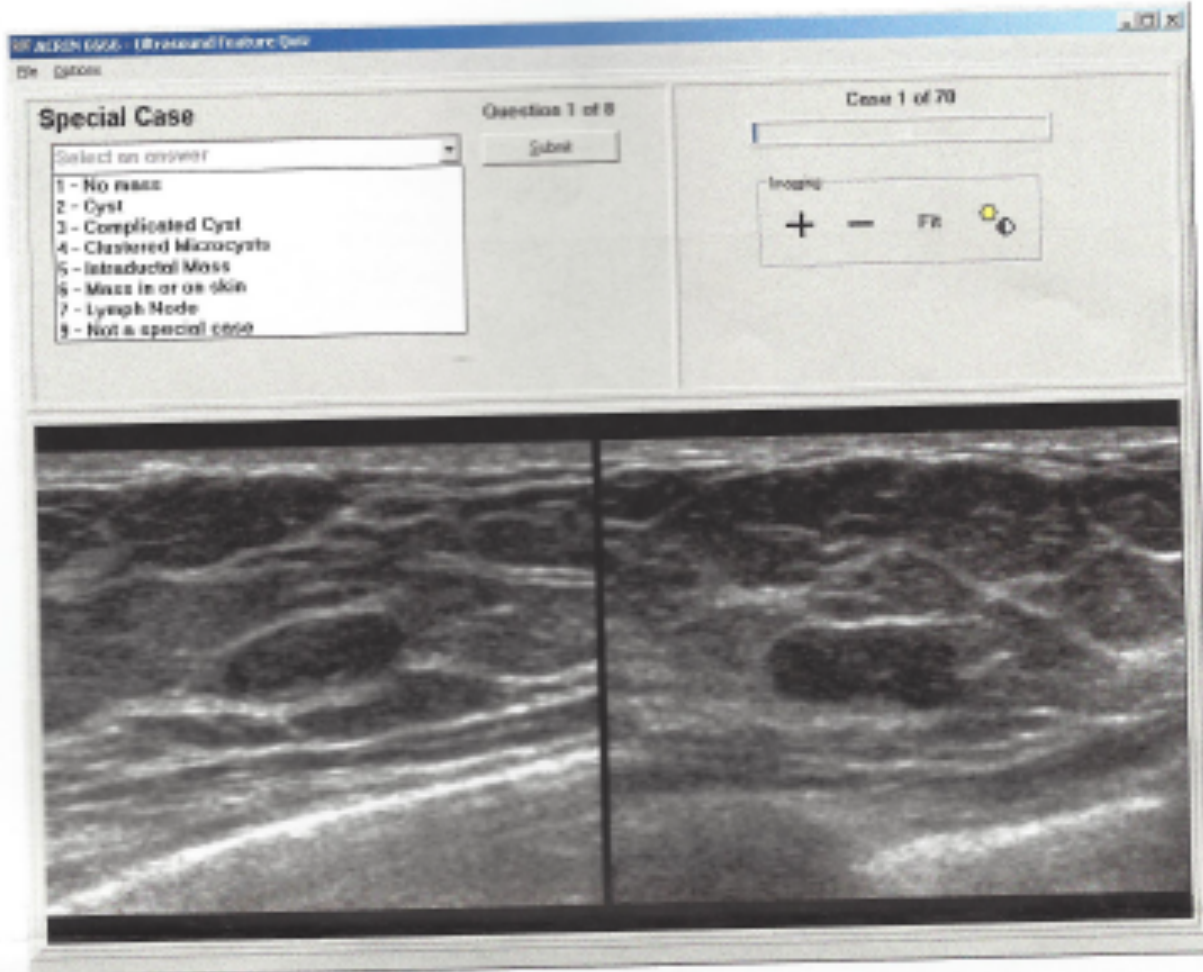
- Complicated cysts
- Oval or gently lobulated, circumscribed, horizontal, with no posterior features
- Clustered microcysts
- Uniformly hyperechoic masses

All data will be kept confidential and anonymized for analysis

### Getting Started:

Double click the "acr" icon labeled "ACRIN-Avon 6666 Ultrasound Feature Quiz" on your *desktop* to start.

- At program launch, click the "Start Quiz" button.
- A small box will appear asking you to enter your user ID. Your ID is your name (last, first) you will then be taken to the first case.
- Each question must be answered
- To choose an answer, make a selection from the drop-down list and then click "Submit" to record your answer. There are 8 questions in each case.



- If the lesion is a special case or normal, you may select "not applicable" for some of the descriptors such as shape or orientation.
- Following each case will be a summary of your answers for that particular case (see image below).
- You will be given the opportunity to modify any of your choices by using the blue "back" (undo) arrow to choose another answer. You will be taken back to the specific question and you may change your answer. Click "Submit" to record your new answer.

Summary page (below)



For each case the following questions will be asked and you will choose one of the numbered answers:

- Special Case
  - 1=No mass
  - 2=Cyst
  - 3=Complicated Cyst
  - 4=Clustered Microcysts
  - 5=Intraductal Mass
  - 6=Mass in or on skin
  - 7=Lymph node
  - 8=Not a special case
- Shape
  - 0=Special Case
  - 1=No Mass
  - 2=Oval or Gently Lobulated
  - 3=Round
  - 4=Irregular
- Margins
  - 0=Special Case (e.g. intraductal mass)

- 1=No mass
- 2=Circumscribed
- 3=Not circumscribed
  - Includes indistinct, microlobulated, angular, speculated
- Orientation
  - 0=Special Case
  - 1=No mass
  - 2=Parallel
  - 3=Not parallel (includes round)
- Echogenicity
  - 0=Special Case
  - 1=No mass
  - 2=Anechoic
  - 3=Hyperechoic
  - 4=Complex (cystic and solid)
  - 5=Hypoechoic
  - 6=Isoechoic
  - 7=Mixed hyper- and hypoechoic
- Posterior Features
  - 0=Special case
  - 1=No mass
  - 2=None
  - 3=Enhancement
  - 4=Shadowing
  - 5=Combined
- Calcifications
  - 1=None
  - 2=Macrocalcifications (> 0.5mm)
  - 3=Microcalcifications in a mass
  - 4=Microcalcifications outside a mass
- Final Assessment
  - 1=Negative
  - 2=Benign
  - 3=Probably benign
  - 4=4A, Low suspicion, biopsy
  - 5=4B, Intermediate suspicion, biopsy
  - 6=4C, Moderate suspicion, biopsy
  - 7=Highly suggestive of malignancy

#### **Brightness/Contrast:**

There are two ways to access the Brightness/Contrast window:

- (1) Click the Brightness/Contrast icon (Yellow dot and half black, half white dot. Resembles brightness and contrast for your monitor) in the Imaging box.



**OR**

- (2) Click the "Options" menu, then click "Brightness/Contrast"

A window with Brightness along the x-axis and Contrast along the y-axis will appear. Click and hold the left mouse button, then drag the mouse along the desired axis to adjust.

### **Zooming:**

There are two ways to adjust the zooming level:

- (1) Click the "Zoom In" icon ( +, plus sign) in the Imaging box. Click the "Zoom Out" icon ( -, minus sign) in the Imaging box.
- (2) If you have a scroll wheel on your mouse, you can scroll the wheel up and down to zoom in and out.

To return the image to the original window size, click the "Fit" button.

If your image is zoomed larger than the screen size, you can "Hand Pan" the image by clicking and holding down the left mouse button. The mouse icon will change to a hand. Then, move your mouse in the direction you wish the image to be moved.

### **Leaving the quiz:**

The dataset will be stored only at the completion of a case. If you pause do so at the end of a case (once you hit "Submit these answers")

To exit the quiz and return at a later time, use the same ID as you did when you began the quiz. This will bring you back to where you left off.

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