

# Architectural distortion on Ultrasound

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The committees of both the Japan Society  
of Ultrasound in Medicine(JSUM)

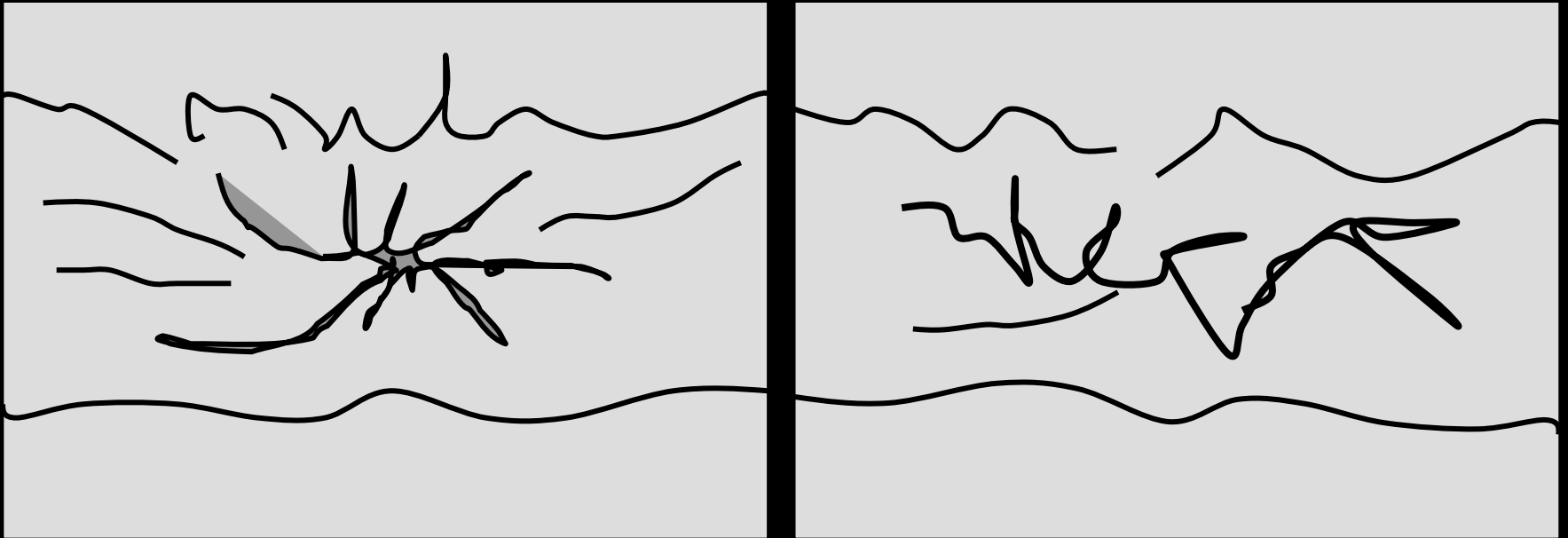
and

the Japan Association Breast and Thyroid Sonology (JABTS)<sup>2)</sup>

# Background

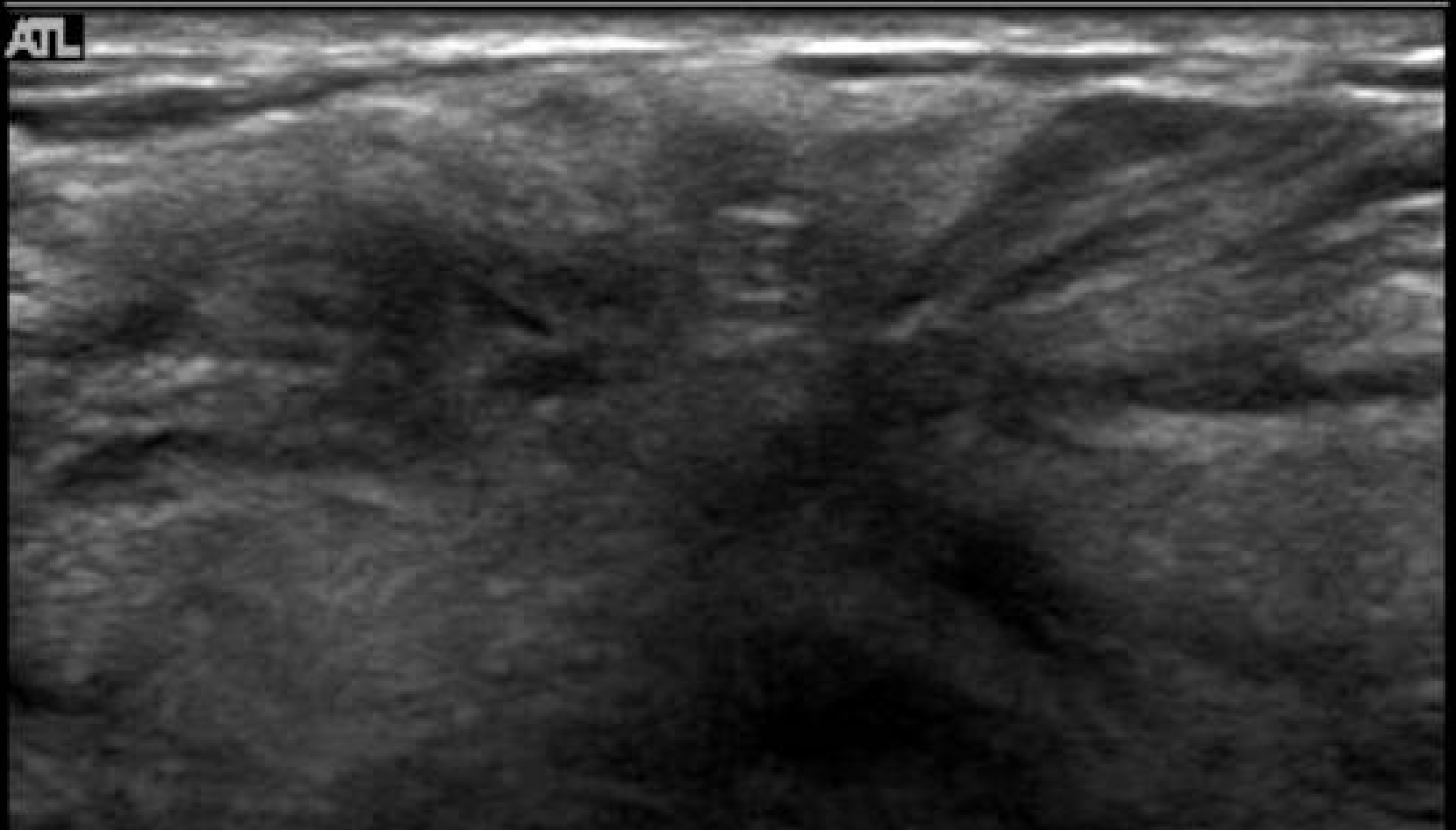
- Architectural distortion (AD) on mammography (MMG) is considered to be one of the most important indicators of breast cancer. Recently, AD has been detected via ultrasonography (US) even in the absence of a definitive mass.

# Definition of Architectural distortion



- Retraction of mammary gland and surrounding tissue
- Distortion refers to the presence of a radiating structure concentrated at a point.

# The representative case



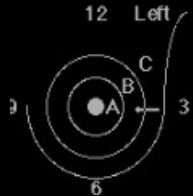
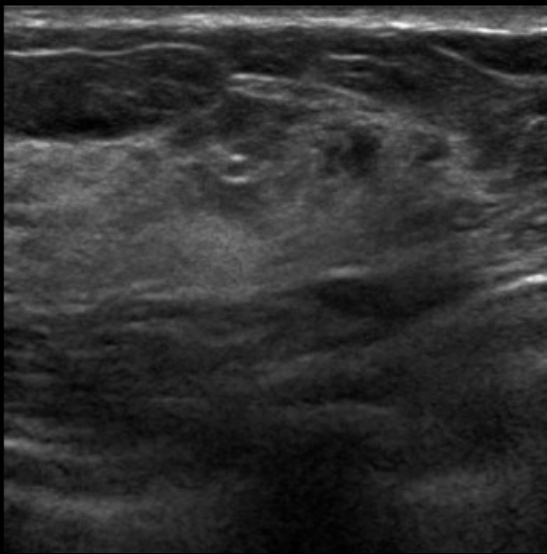
The radiating structure concentrated at one point.  
This is DCIS in SA.

# The cause of Architectural distortion

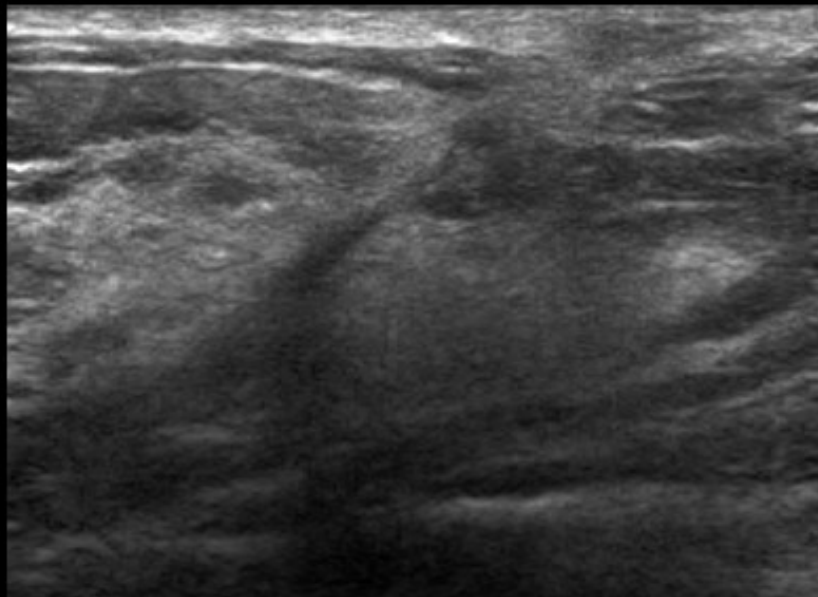
- ( 1 ) biopsy or operation**
- ( 2 ) benign disease**
- ( 3 ) malignant disease**
- ( 4 ) neoadjuvant chemotherapy for breast cancer**

# ( 1 ) biopsy or operation

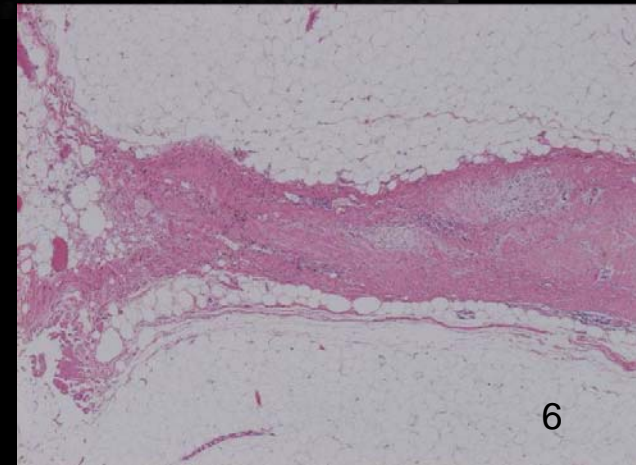
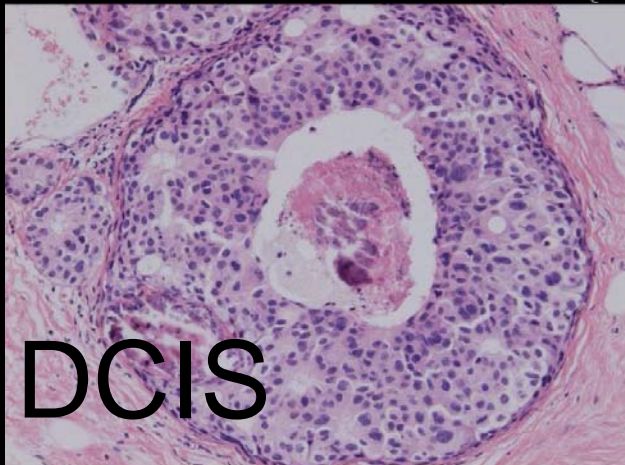
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noCT™  
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Before MMT



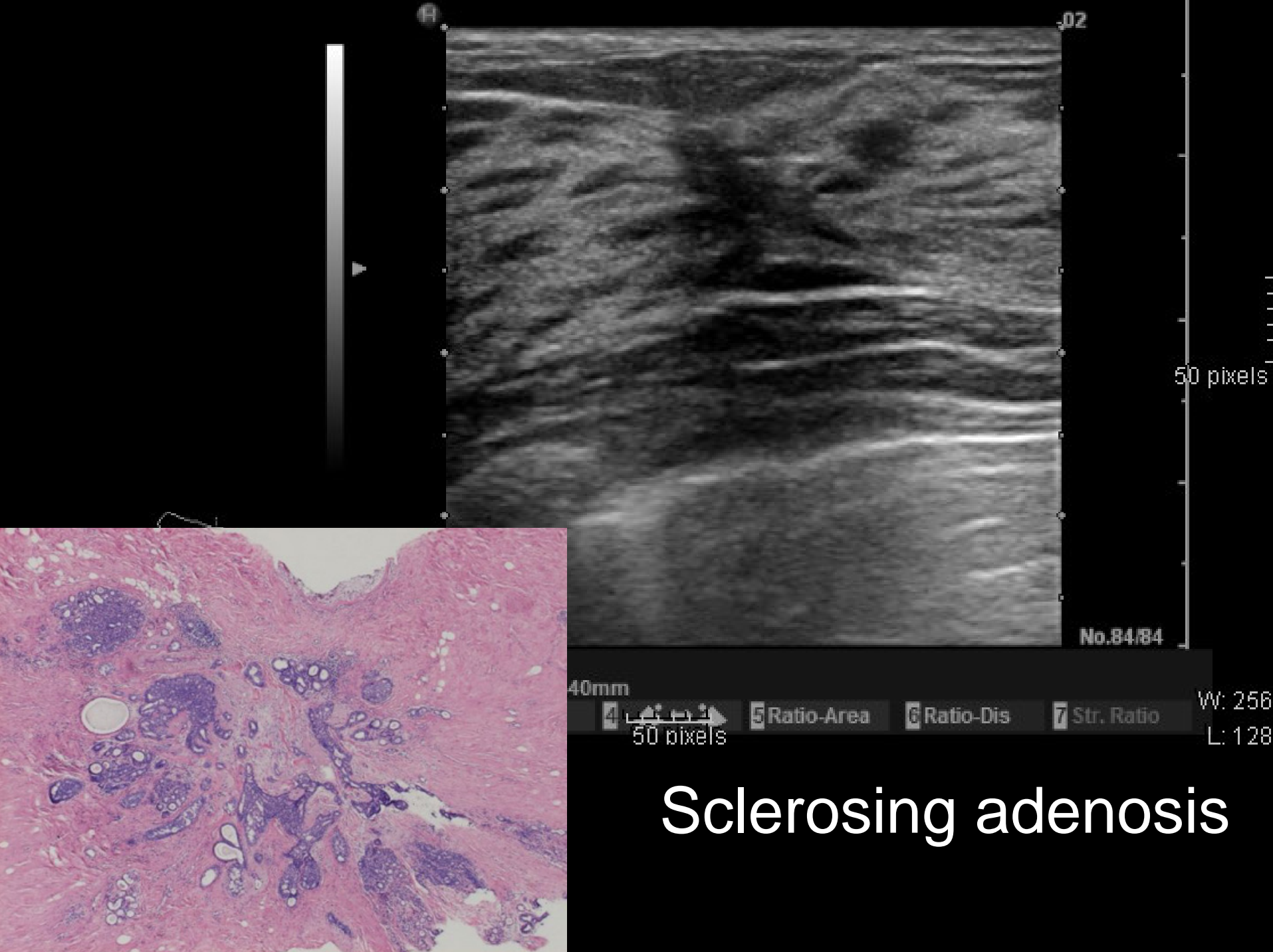
After M M T biopsy



# The cause of Architectural distortion

## ( 2 ) **Benign disease**

- Fibrosis
- Adenosis
- Sclerosing adenosis
- Fat necrosis



.02

50 pixels

No.84/84

40mm

4 50 pixels

5 Ratio-Area

6 Ratio-Dis

7 Str. Ratio

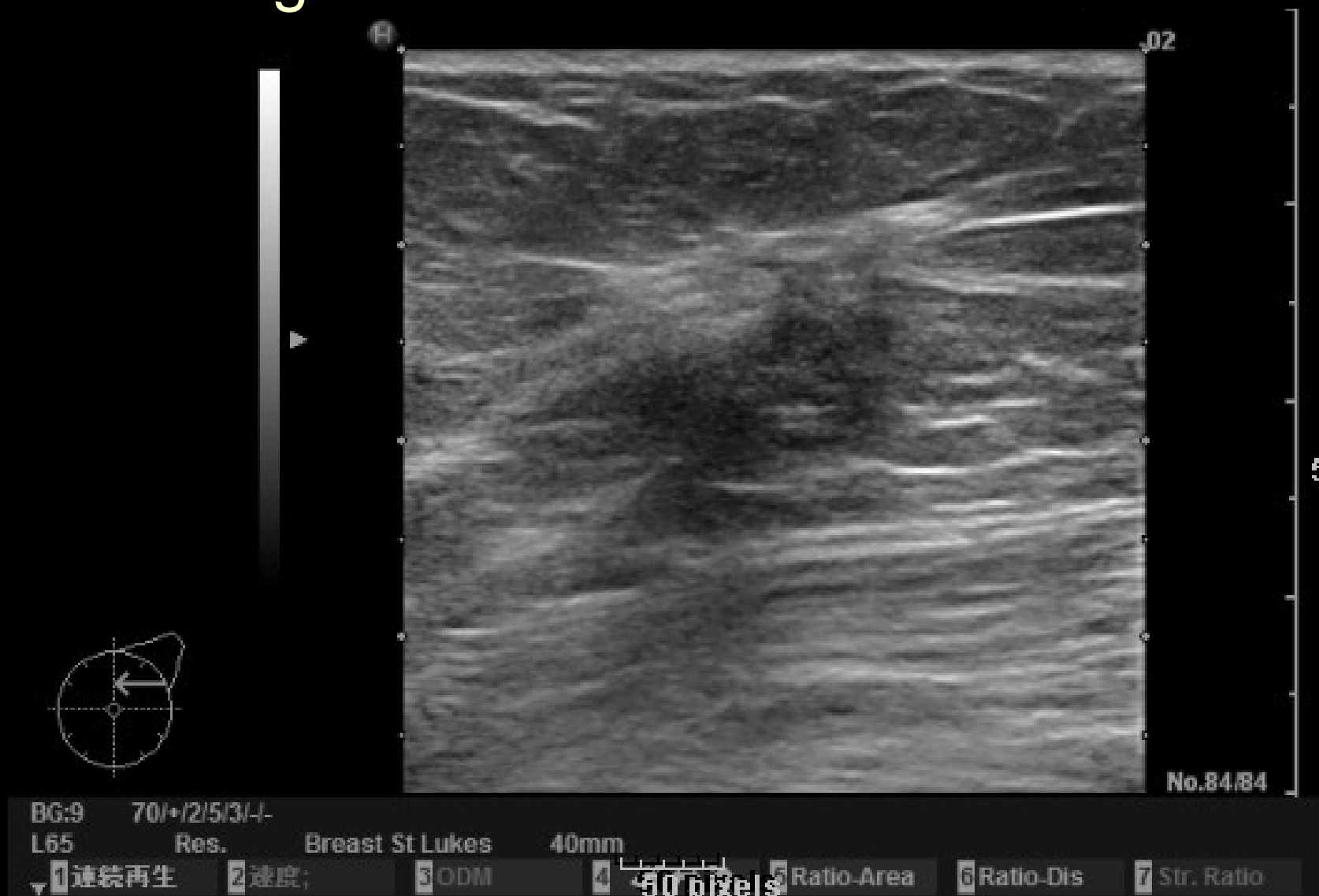
W: 256

L: 128

# Sclerosing adenosis



# Sclerosing adenosis



# C-mode is better to understand the appearance of distortion

The image displays four C-mode ultrasound scans arranged in a 2x2 grid. The top row shows scans at 3.1 mm and 2.1 mm depths, while the bottom row shows scans at 1.1 mm and 0.1 mm depths. A vertical scale on the left indicates the depth. The scans show a central bright region with radiating lines, which become increasingly distorted and blurred as the depth increases. The bottom row scans (1.1 mm and 0.1 mm) show significantly less distortion compared to the top row scans (3.1 mm and 2.1 mm).

Scan 03

Th 0

Tr 50

MPX 20

T.I 30

3.1 mm

2.1 mm

1.1 mm

0.1 mm

1 dm

0.

Single S

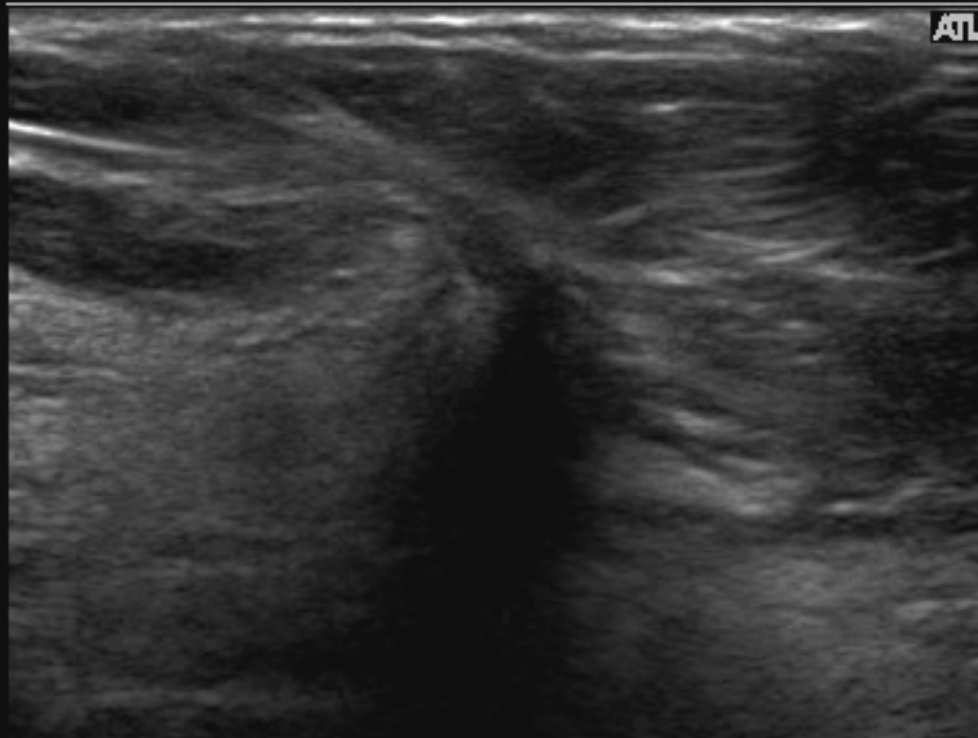
Storing HDD:75% Free 50 levels SELECT ▶

# The cause of Architectural distortion

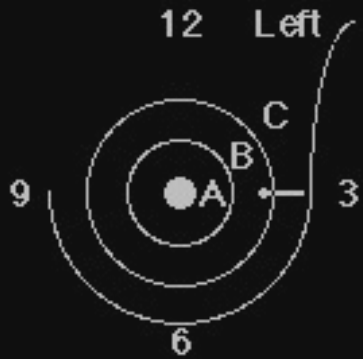
## **( 3 ) Malignant disease**

- Invasive carcinoma
- Ductal carcinoma in situ

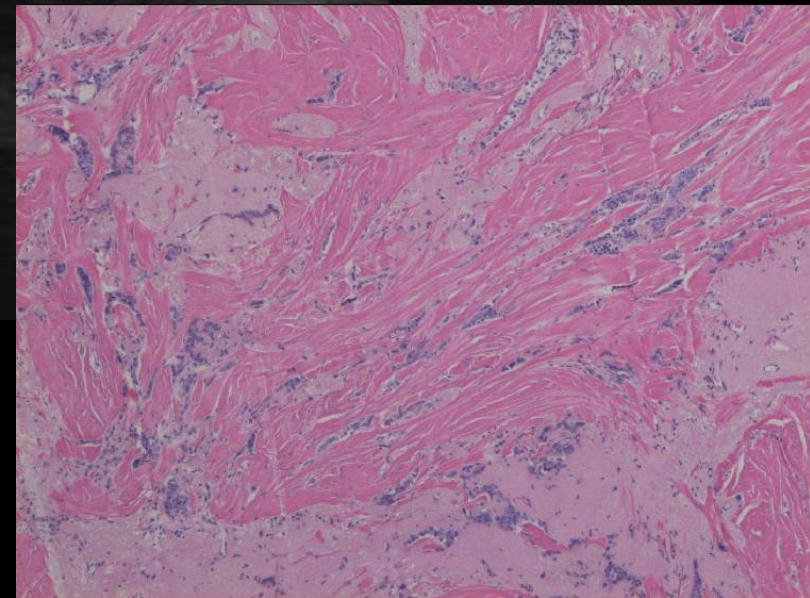
Map 4  
170dB/C 4  
Persist Off  
2D Opt:FSCT  
Fr Rate:Surv  
SonoCT™  
XRes™

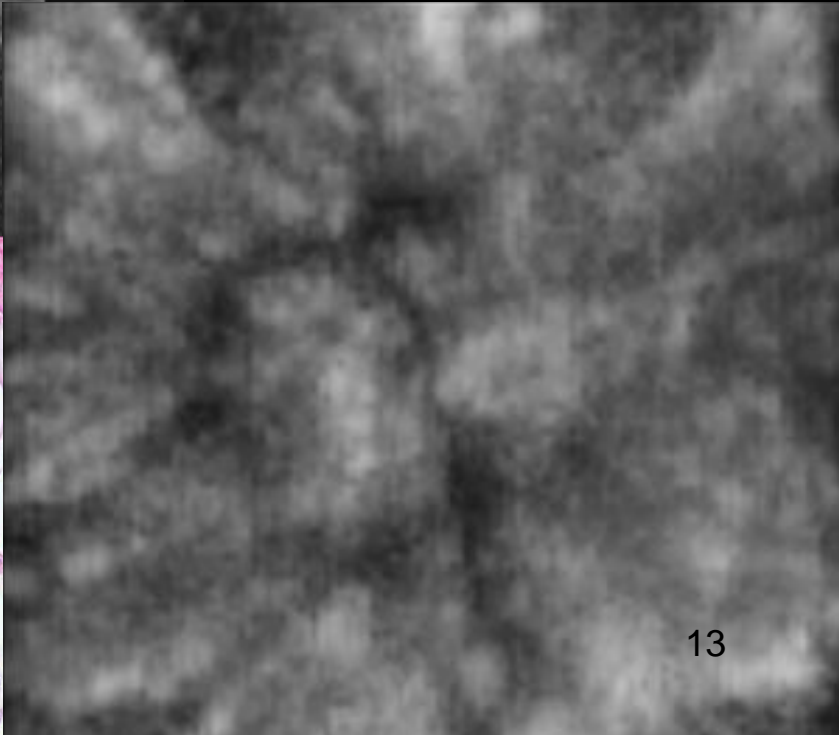
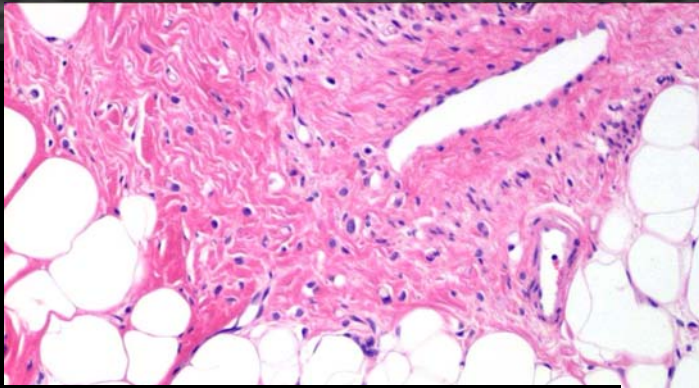
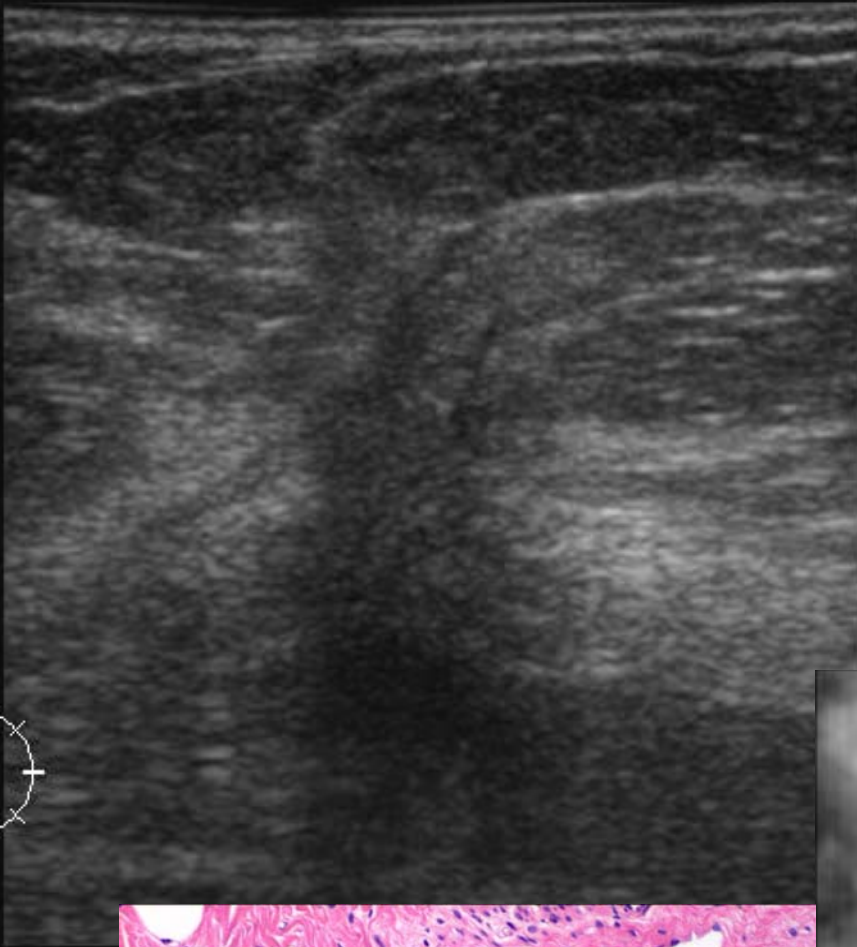


12



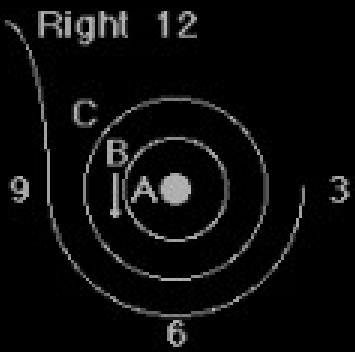
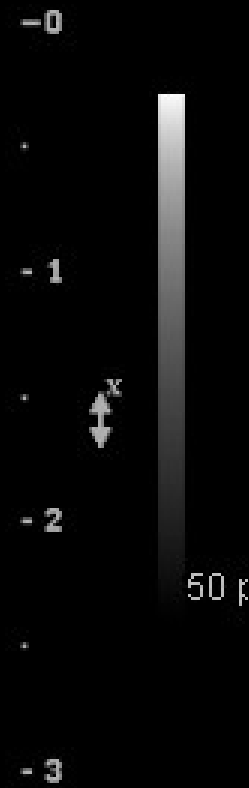
**Invasive ductal carcinoma**  
retracts the mammary gland  
and surrounding tissue





Invasive lobular carcinoma

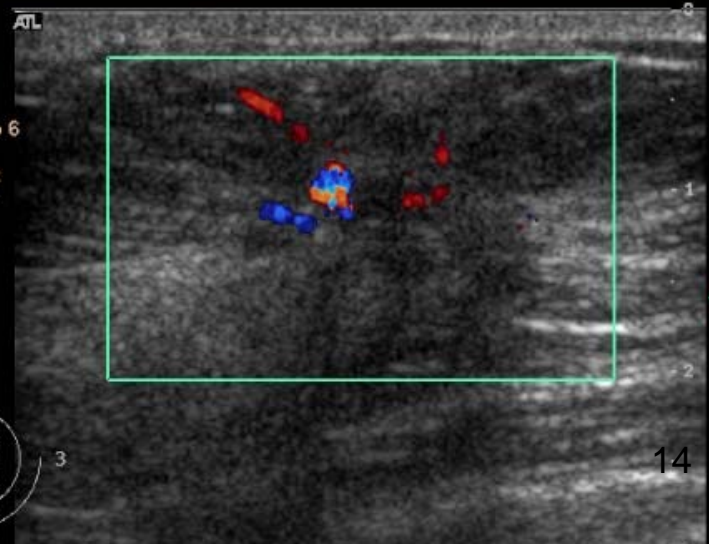
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170dB/C 4  
Persist Off  
2D Opt:FSCT  
Fr Rate:Surv  
SonoCT™  
XRes™

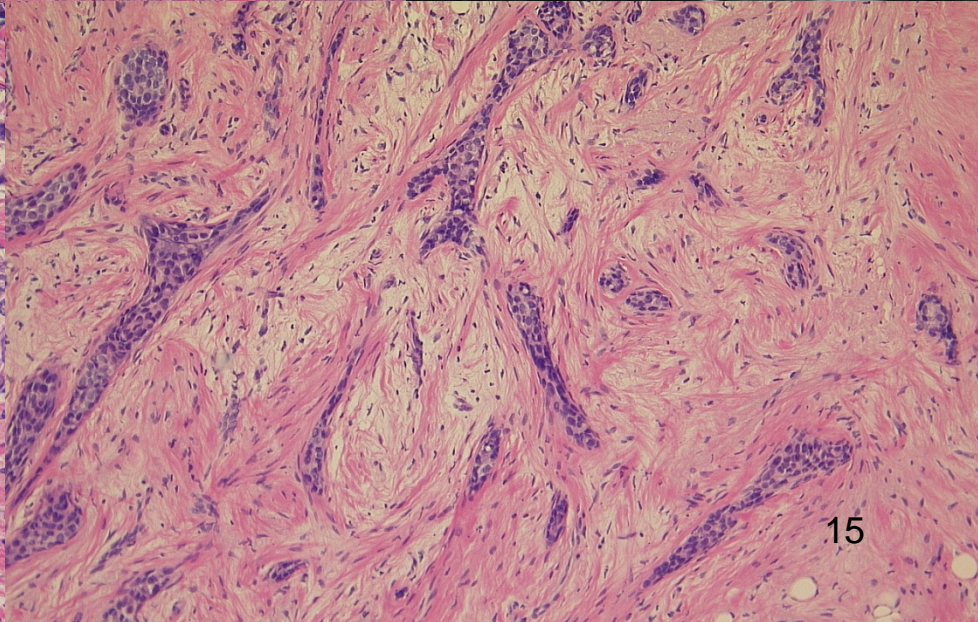
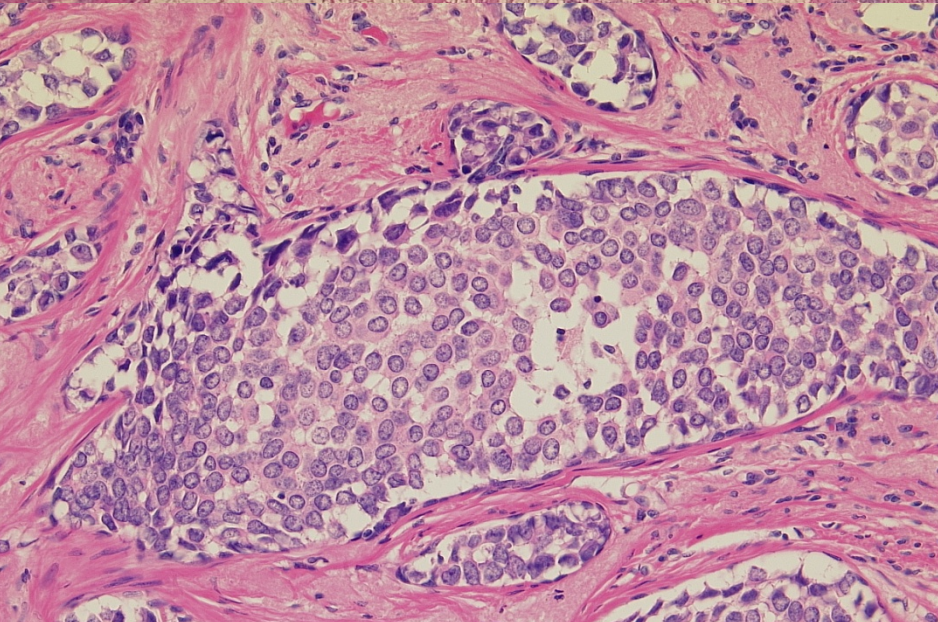
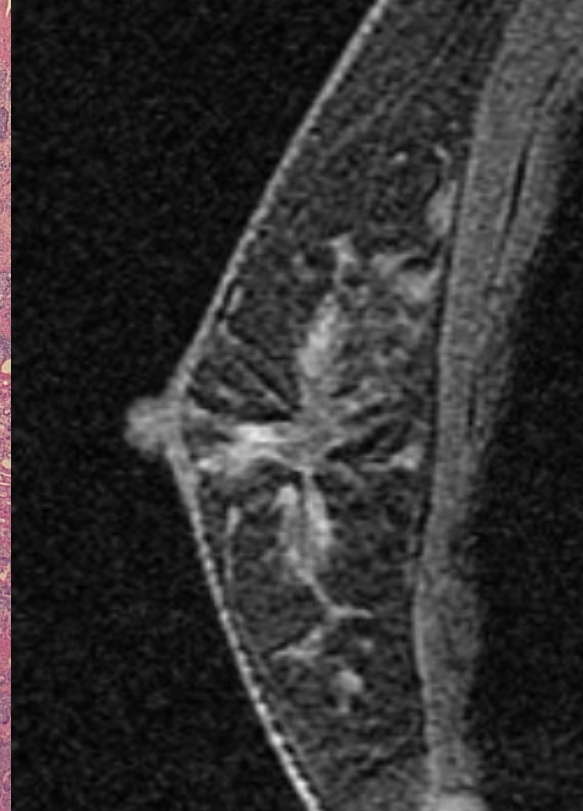
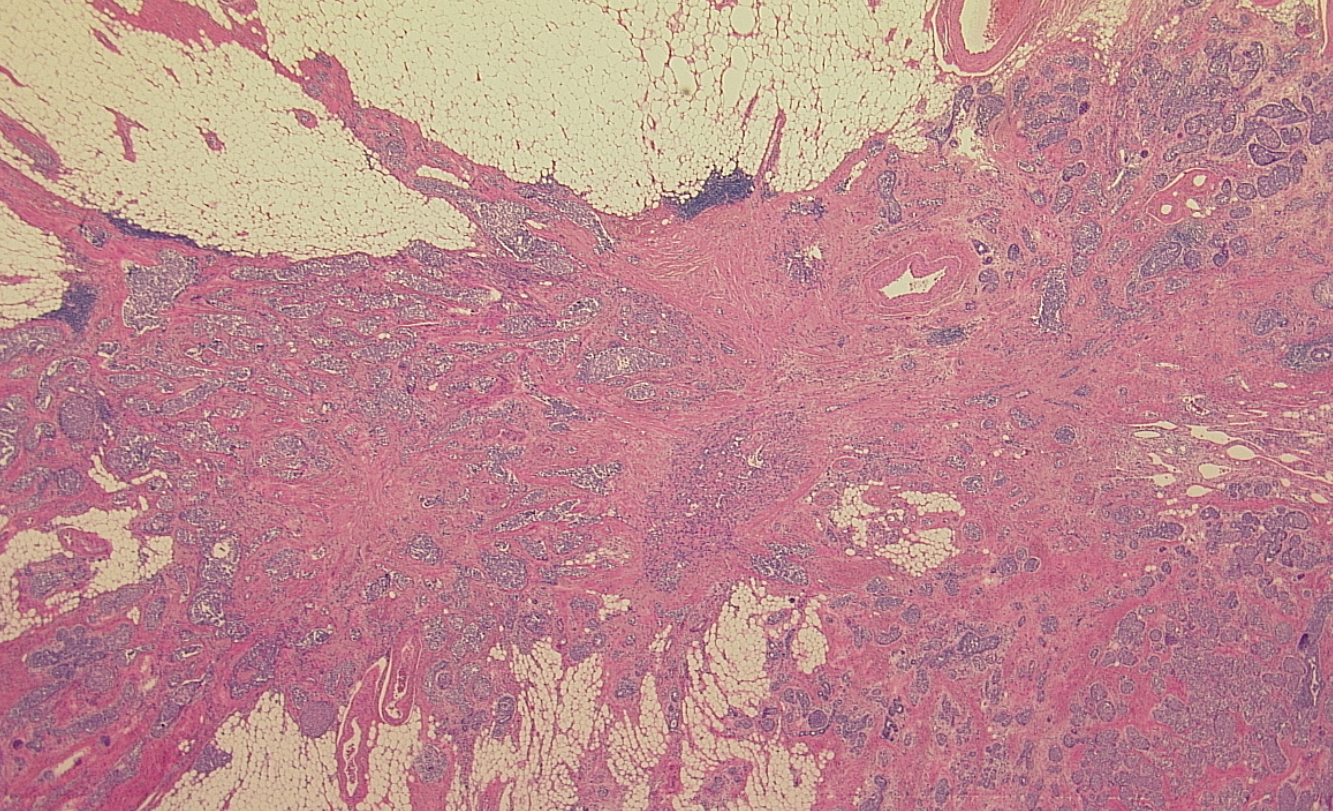


## DCIS in sclerosing adenosis

Recently the frequency of these cases (DCIS in SA) seen as distortion increases in Japan.

Map 4  
170dB/C 3  
Persist Med  
2D Opt:Gen  
Col 79% Map 6  
WF Low  
700 Hz  
Opt: Res



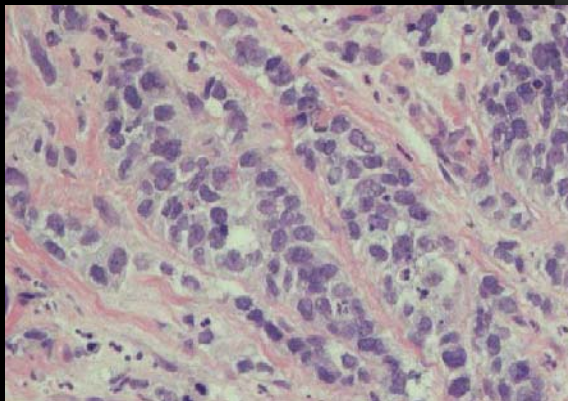


# The cause of Architectural distortion

**( 4 ) Neoadjuvant chemotherapy  
for breast cancer**



# Pre-chemotherapy



Se: 0001a  
Im: 21

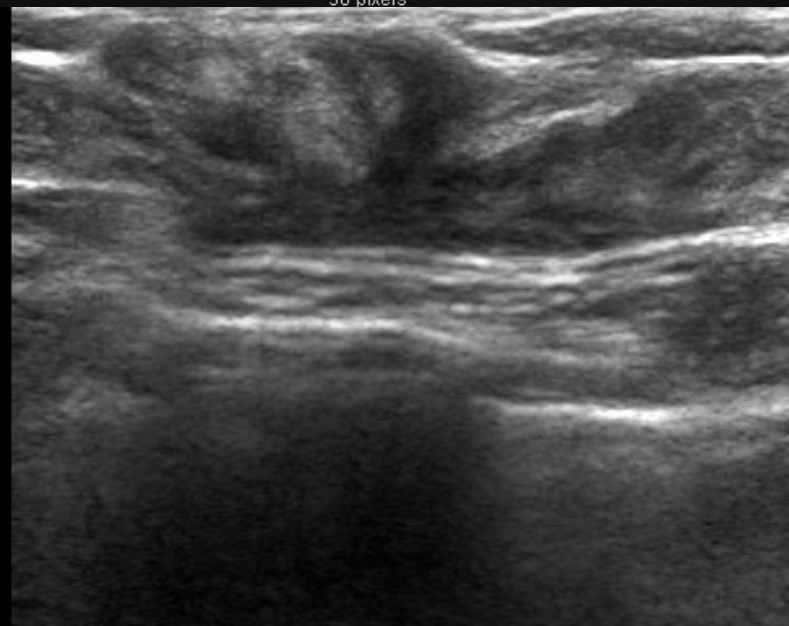
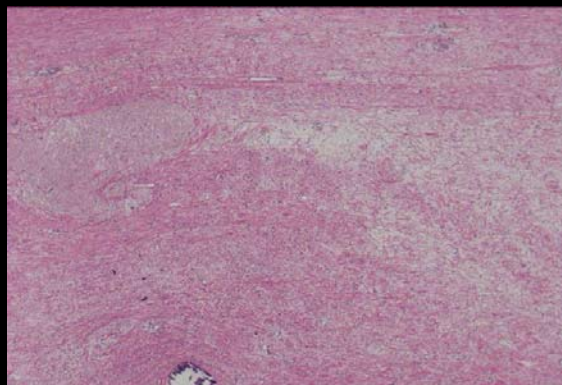


# Post-chemotherapy

**fibrosis**

Man 4

2D OptiFast  
Fr Rate:Surv  
SonoCT™  
XRes™



W: 256  
L: 128

cm

# Architectural distortion

- Retraction of mammary gland and surrounding tissue
- Distortion refers to the presence of a radiating structure concentrated at a point.

( 1 ) **biopsy or operation**

( 2 ) **benign disease**

( 3 ) **malignant disease**

( 4 ) **neoadjuvant chemotherapy for breast cancer**