
بسم الله الرحمن الرحيم

BREAST IMAGING

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INTRODUCTION

- Breast imaging encompasses mammography, ultrasound, magnetic resonance imaging (MRI), and some functional imaging modalities.
- ***Mammography*** is the primary imaging modality used for breast cancer screening.
- The vast majority of women getting breast cancer have no known risk factor.

BREAST IMAGING TECHNIQUES

- Mammography
- Ultrasonography
- MRI
- Tomosynthesis
- Contrast enhanced spectral mammography
- Breast CT, optical imaging, foto-acoustic imaging, breast specific gamma imaging, thermography, phase-contrast mammography…

Mammography

The most common medical imaging method

Advantages

The whole breast is examined

Enables comparison with prior examinations

Sensitive for microcalcifications

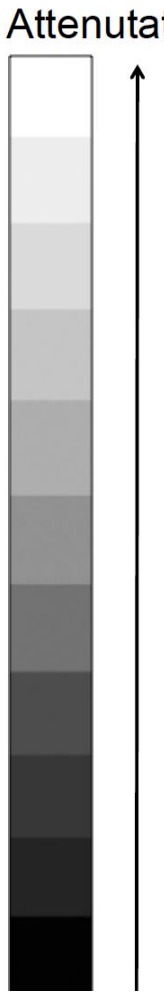
Fast, cheap and accessible

Disadvantages

Radiation - not suitable for young women

Limited sensitivity in dense breasts

MAMMOGRAPHY

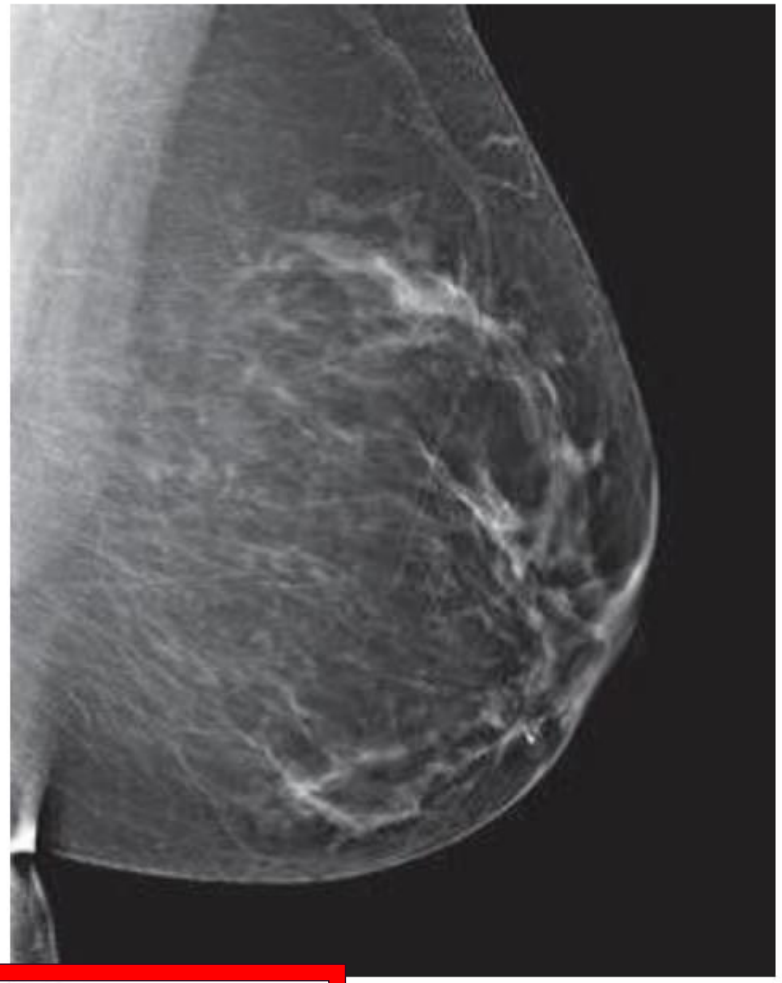


- X-ray imaging technique
- Attentuation differences of tissues with different densities
- Women age > 30–35

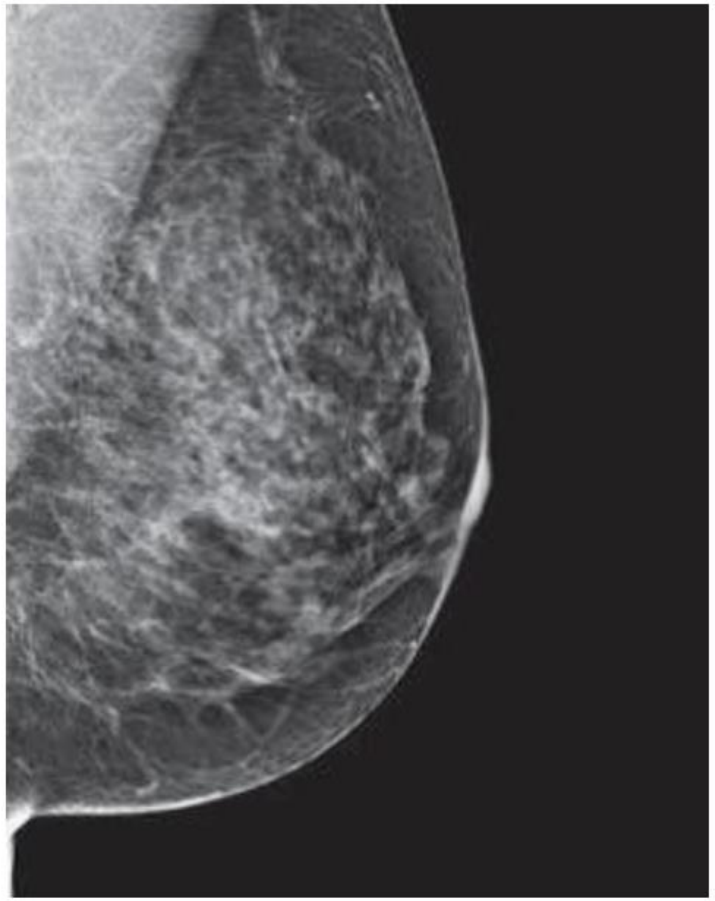
BREAST DENSITY CLASSIFICATION

- There are 4 categories of breast density

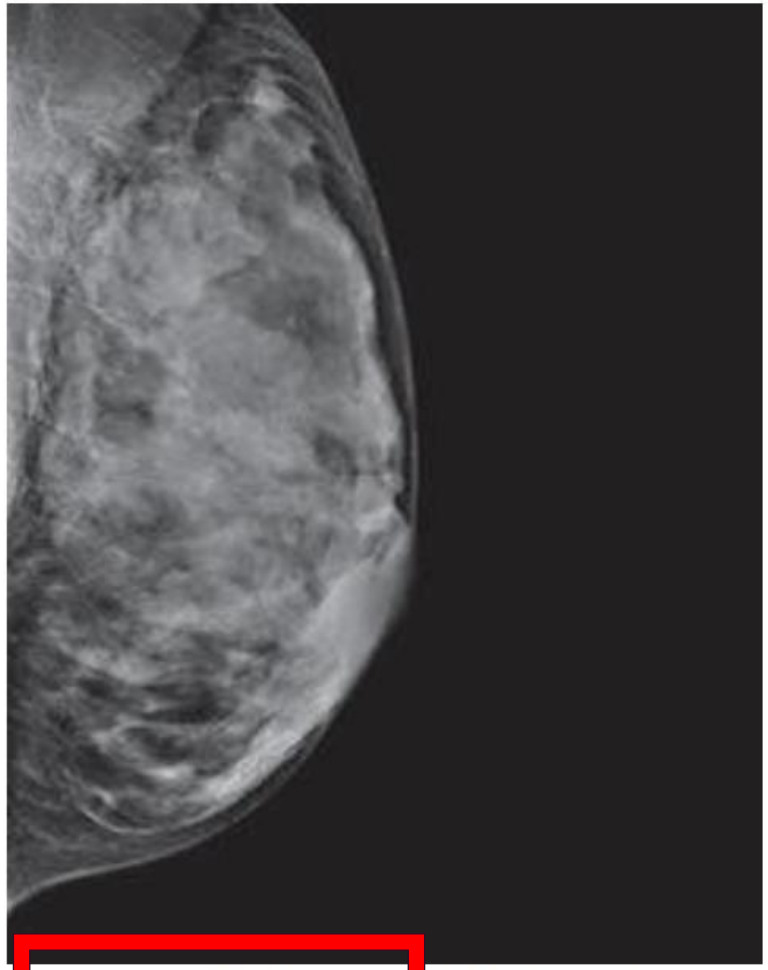
Breasts are almost al fatty tissue.



There are scattered areas of dense glandular and fibrous tissue.



More of the breast is made of dense glandular and fibrous tissue (described as **heterogeneously dense**). This can make it hard to see small tumors in or around the dense tissue.



Breasts are **extremely dense**, which makes it hard to see tumors in the tissue.

Tomosynthesis

Provides a better mammogram

Advantages

Increased sensitivity

Improved preoperative staging

Use the same unit for mammography and tomosynthesis

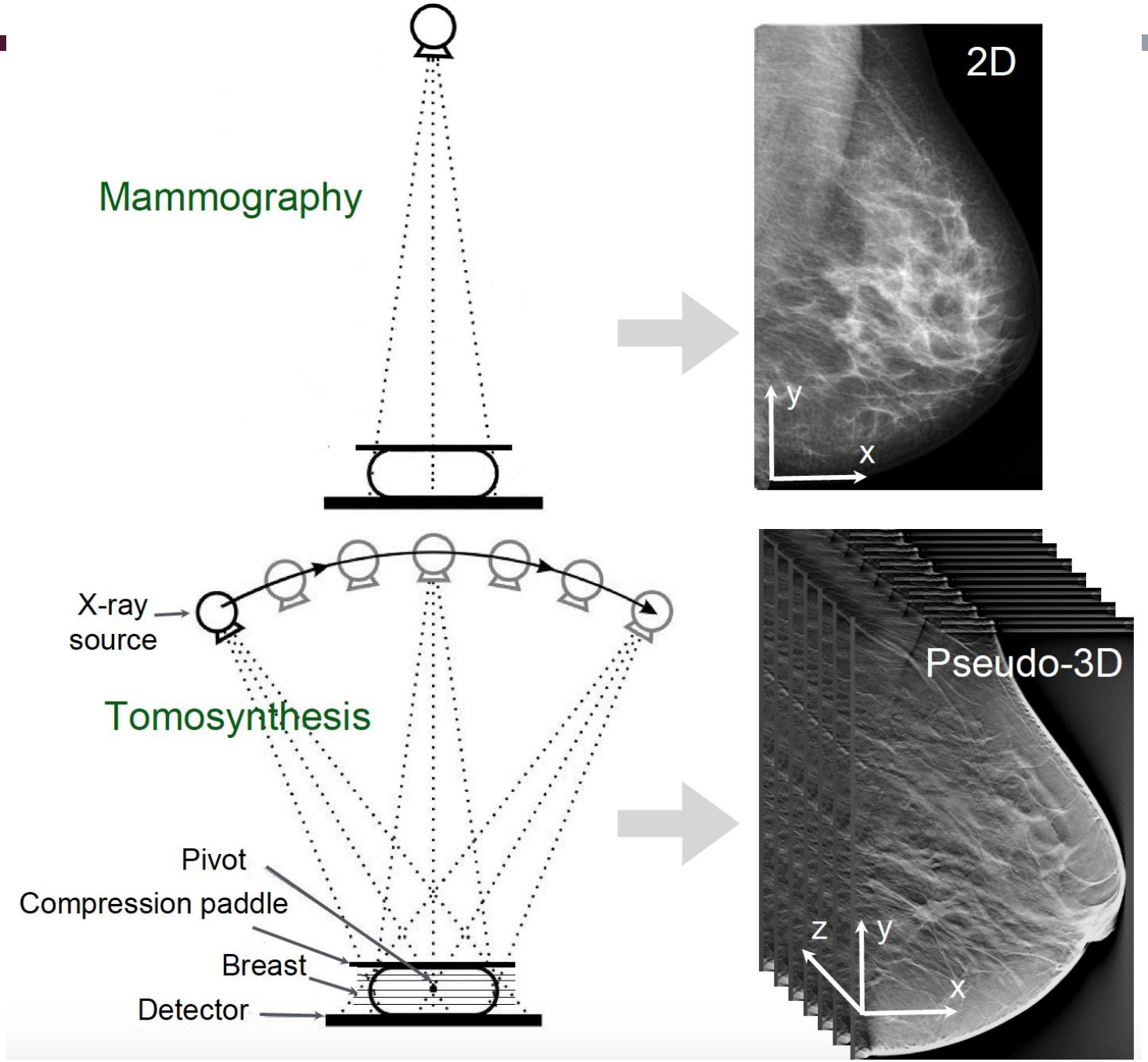
Next screening modality?!

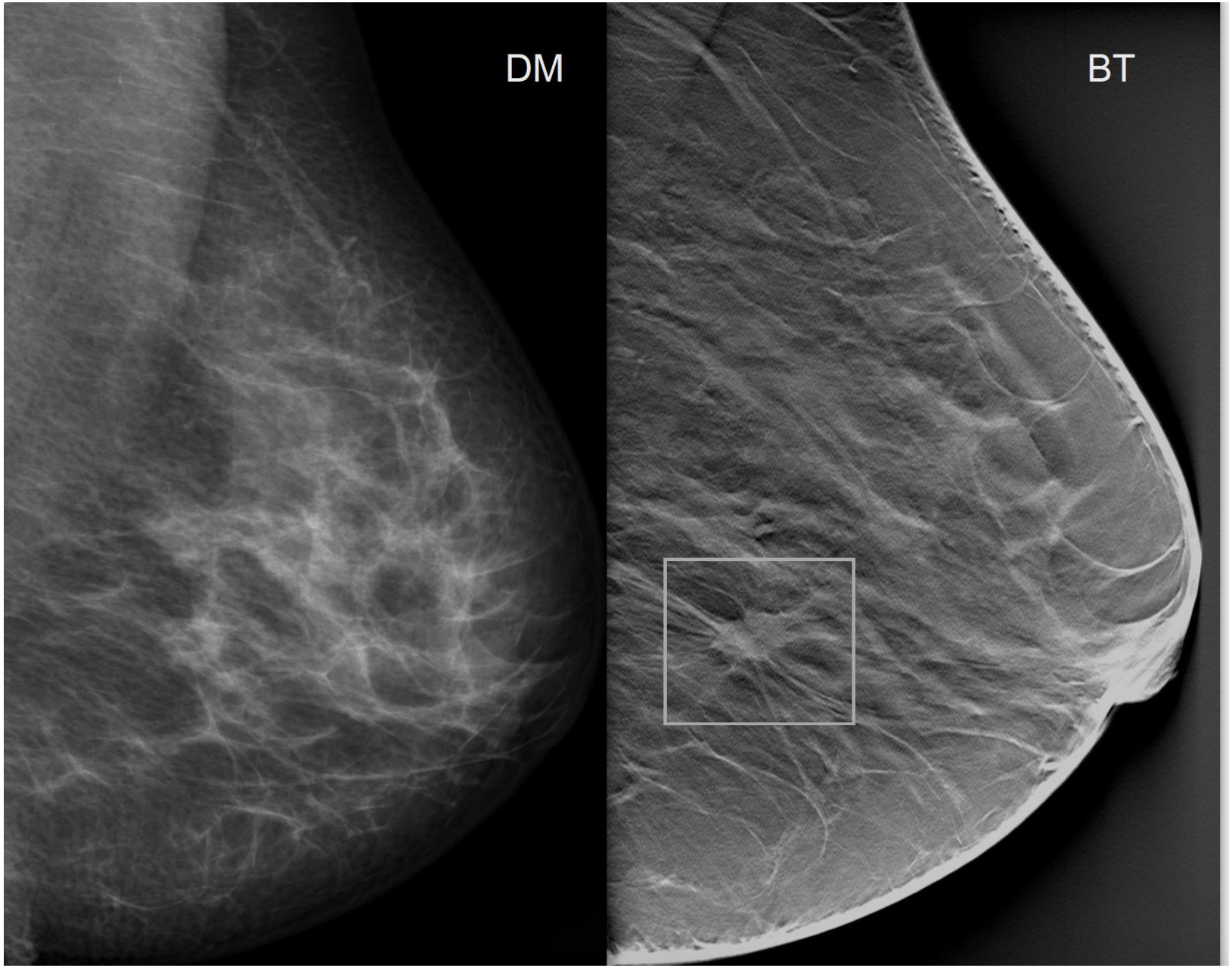
Disadvantages

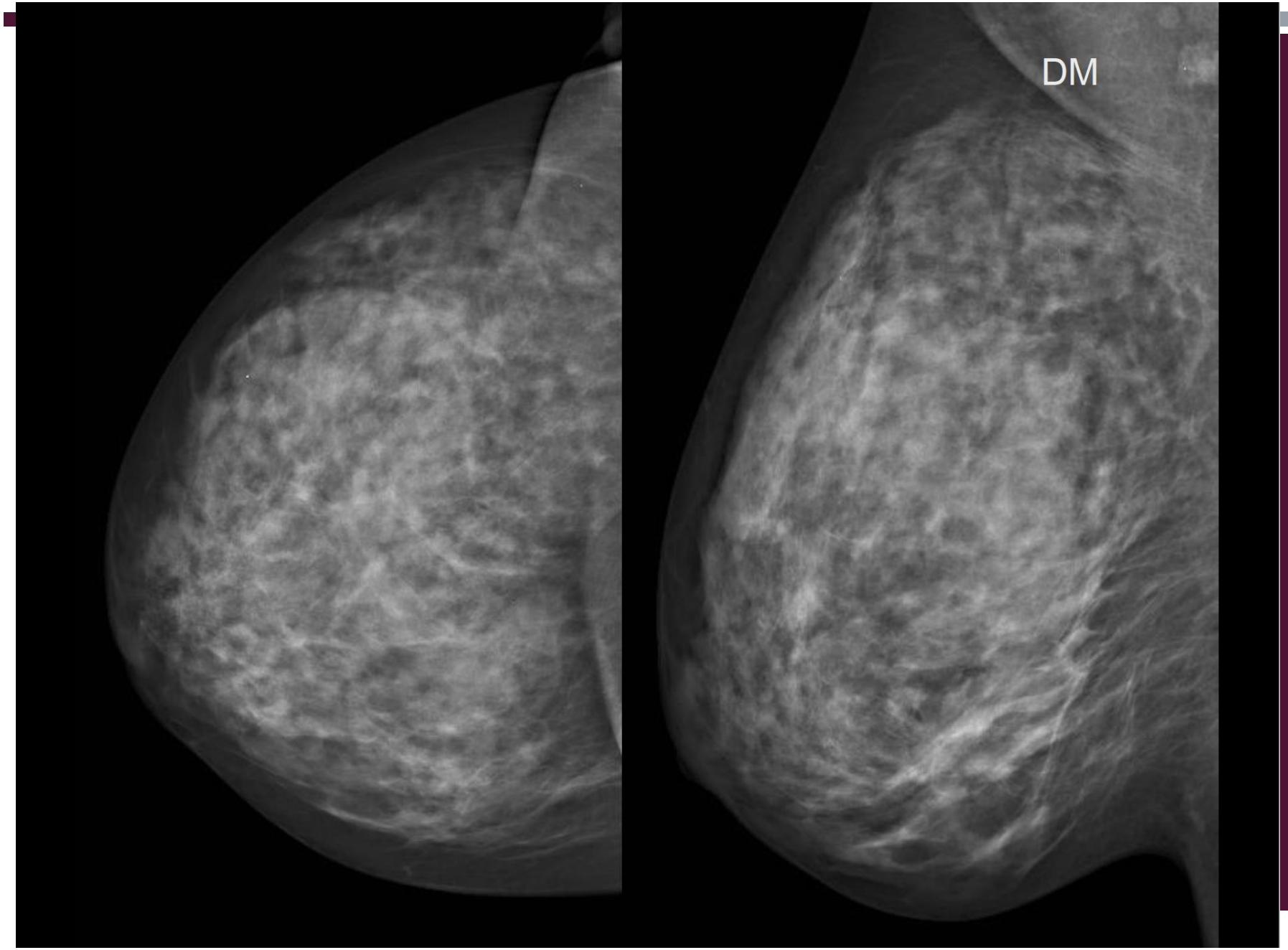
Radiation based method

Not 100% sensitivity!

Reading time x 2-4


Mammography
2D
y
x
X-ray
source
Tomosynthesis
Pivot
Compression paddle
Breast
Detector
Pseudo-3D
z
y
x


DM
BT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Tomosynthesis

Provides a better mammogram

Advantages

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Radiation based method

Not 100% sensitivity!

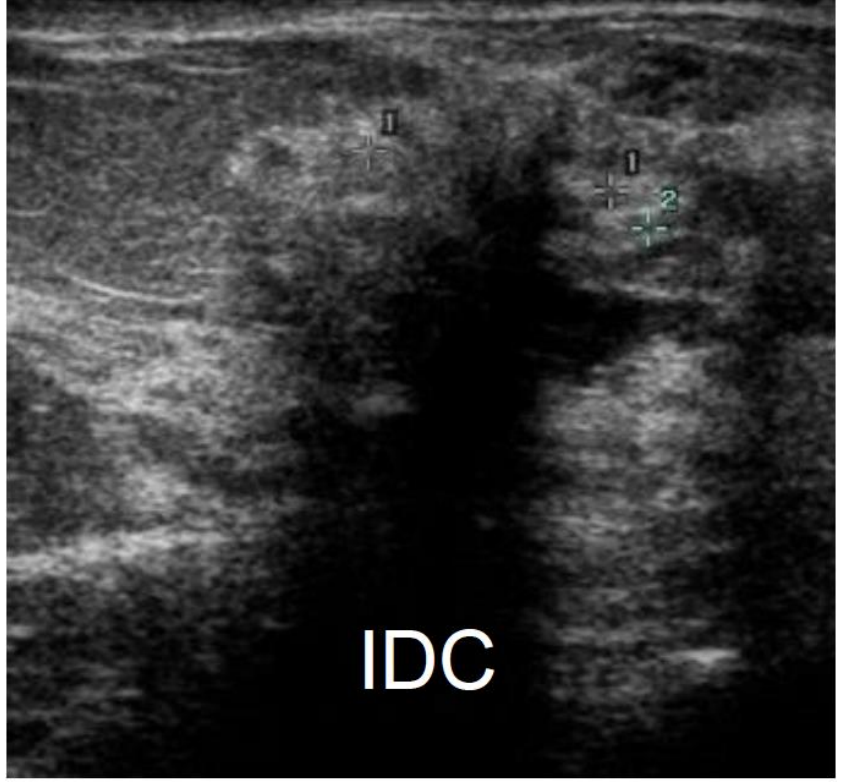
Reading time x 2-4

Ultrasonography

- Uses pulses of high-frequency sound waves that are reflected in various degrees in different types of tissues

- Indications:
  - Young women (age <30–35)
  - Dense breasts
  - Characterize/classify lesions seen on mammography
  - Lymph node assessment
  - Guidance at interventional procedures (FNAC, biopsy, preoperative localization, etc)


B
B: 173.0 pix
A
17 mm
IDC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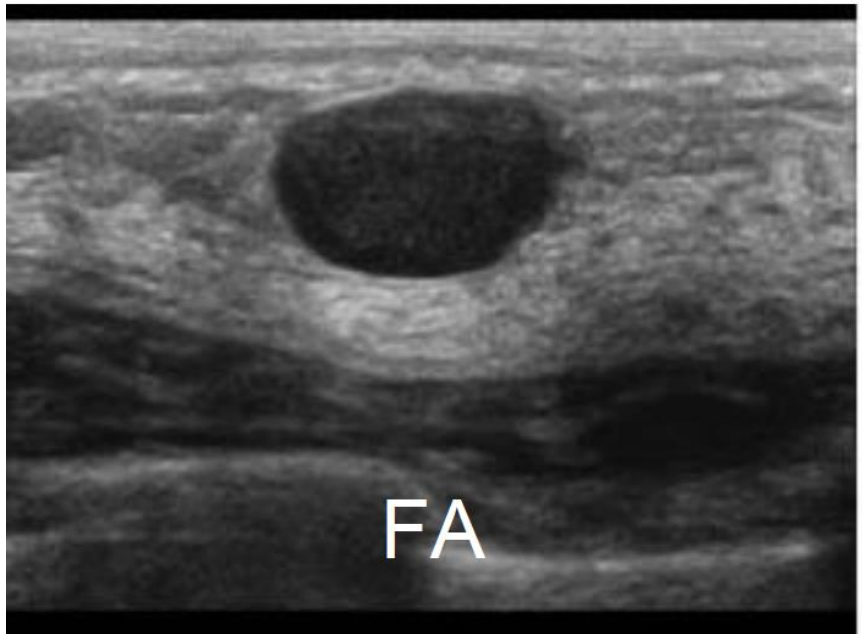
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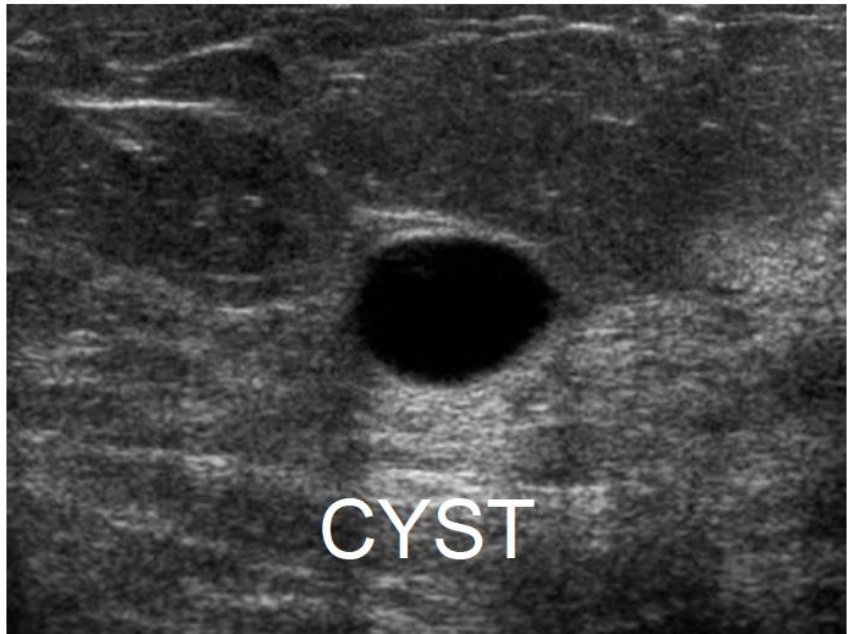

CYST

Ultrasonography

Advantages

Young women

Dense breasts

Characterize dense lesions seen on mammography

Guide at interventional procedures

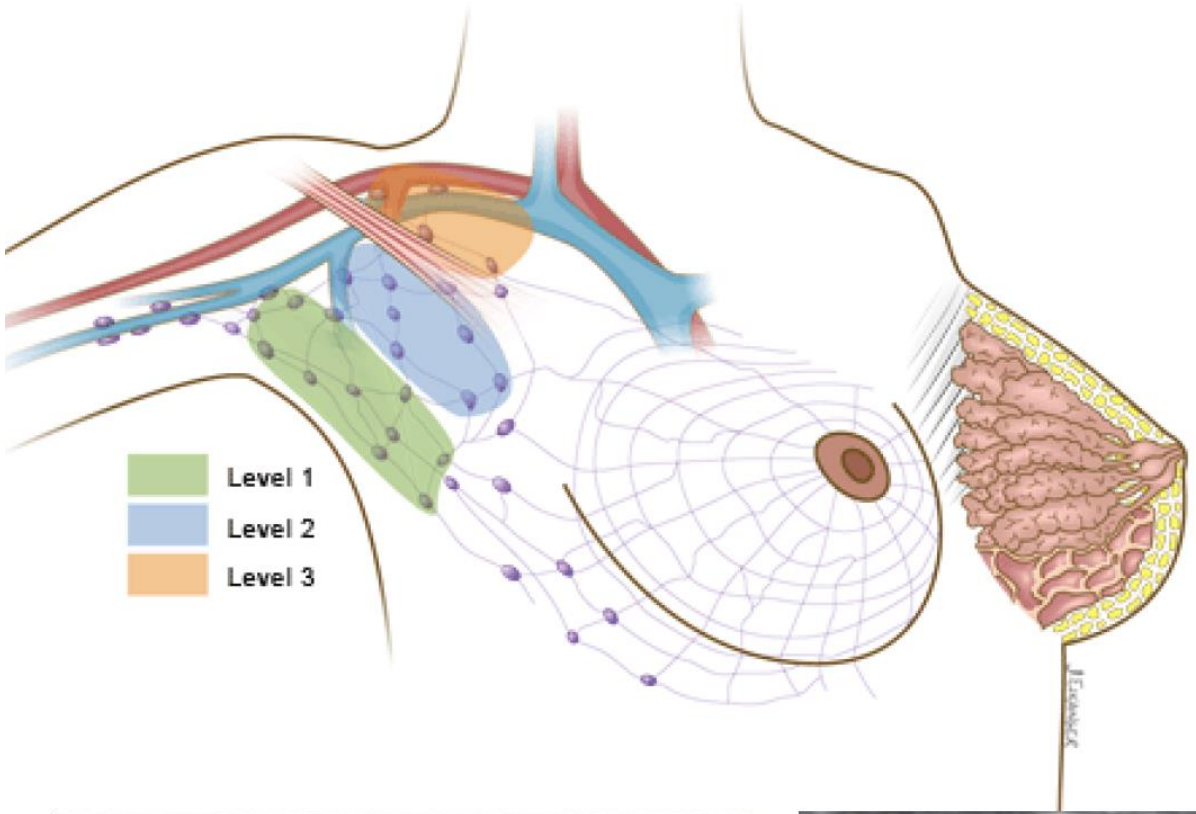
Disadvantages

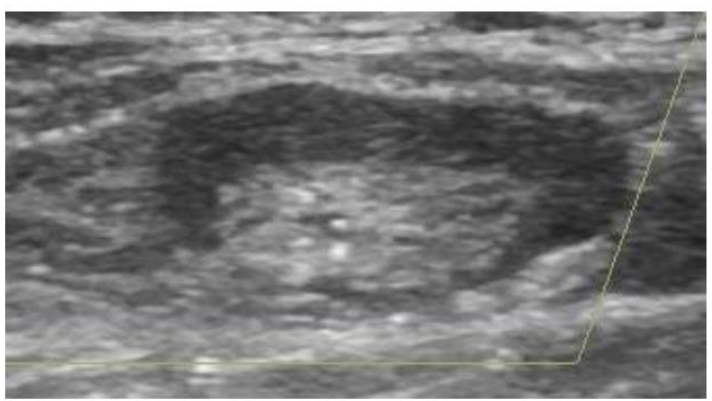
Microcalcifications

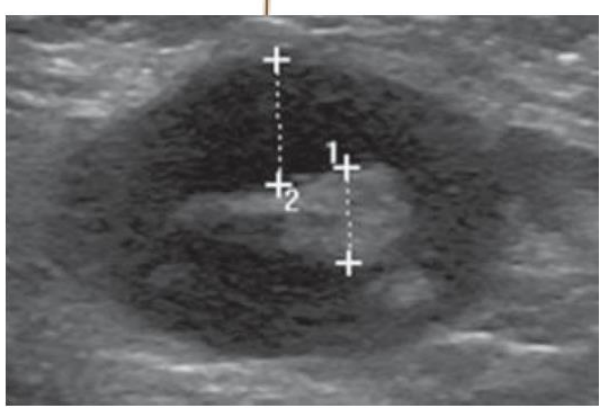
Operator dependant

False positives

Lymph node assessment



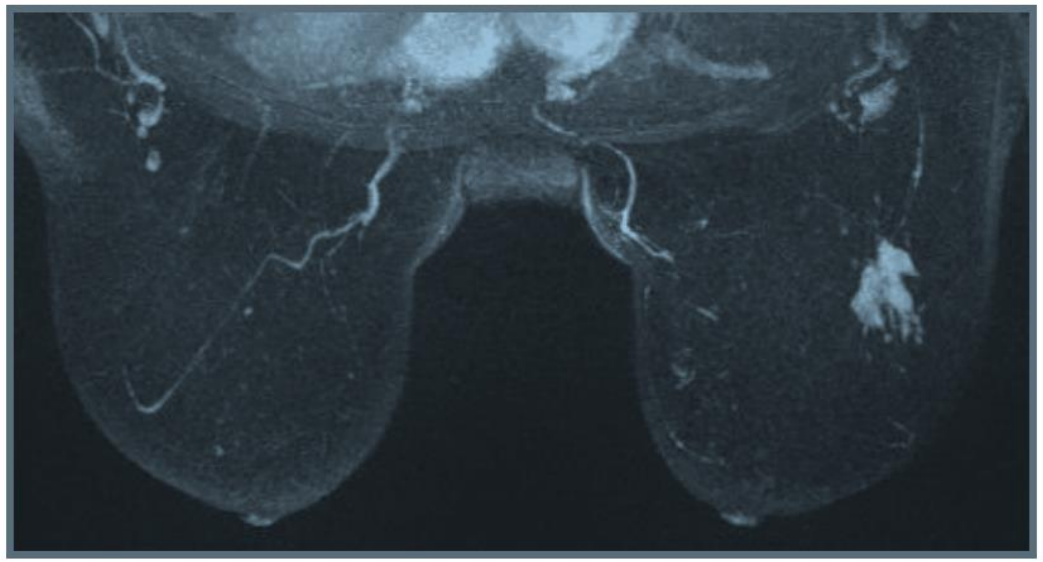




ROLE OF ULTRASOUND IN BREAST SCREENING

- Ultrasound is generally used to assist the clinical examination of a suspicious lesion detected on mammography or physical examination. As a screening device, ultrasonography is limited by a number of factors, most notably by a failure to detect microcalcifications and by poor specificity (34%).
- Currently, it is recommended that ultrasonographic screening for breast disease be reserved for special situations, such as for highly anxious patients who request it and for women who have a history of mammographically occult carcinoma.

Breast MRI



- Dynamic contrast-enhanced MRI (Gadolinium)
- Study the contrast dynamics
- High sensitivity (90%), specificity (72%)

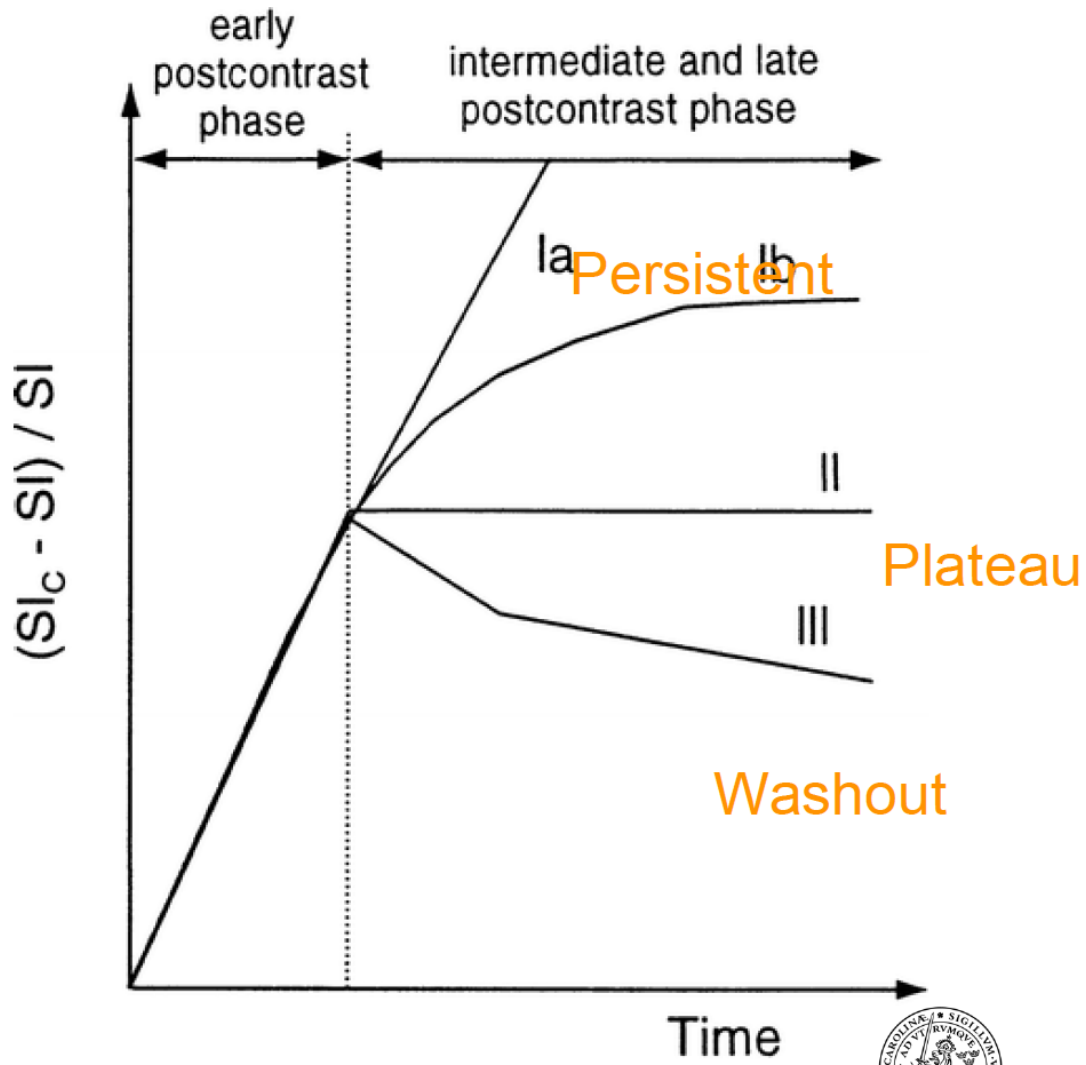
Contrast dynamics

Probability of cancer:

Typ Ia,b: 6%

Typ II: 64%

Typ III: 87%



Indications for breast MRI

- Problem solving in case of inconclusive findings on conventional imaging.
- Screening of the contralateral breast in women with histological evidence of unilateral breast cancer.
- Evaluation of the breasts in case of metastases of an unknown primary carcinoma.
- Evaluation of therapy response in patients treated with neoadjuvant chemotherapy.
- Exclusion of local recurrence after breast-conserving therapy.
- Screening of women with a lifetime risk of 20% or more to develop breast cancer, including mutation carriers.

Breast MRI

Advantages

No ionizing radiation

Dense breasts

High sensitivity

Disadvantages

Microcalcifications

Specificity

Accessibility

Expensive

Types of mammogram

- Screening mammogram
- Diagnostic mammogram

SCREENING MAMMOGRAM

Mammogram of the breast for the women who have no sign or symptom of breast cancer, usually with two x-ray views

• Finding breast cancer early greatly improves a woman's chance for successful treatment

DIAGNOSTIC MAMMOGRAM

X-ray of the breast for a woman with breast problem like lump or nipple discharge or an abnormal area found in screening by taking spot view or magnification view.

TYPES OF MAMMOGRAM MACHINE

- Screen- film units
- Full- field digital mammography units

- FFDM performed significantly better than film screen mammography in premenopausal and perimenopausal women, in women younger than 50 years, and in women with dense breasts.
- No increased risk was demonstrable for women aged 40 years or older at radiation exposure.
- Estimated lifetime risk of breast cancer death from a single mammogram in the age group from 40 to 49 years is approximately 2 in 1 million.
- Studies have shown that one-view examinations miss 20% to 25% of breast cancers.
- Studies have confirmed that DBT has advantage over FFDM with improved overall accuracy in the screening population. (about 38% increase in radiation dose per view)

HOW IS MAMMOGRAM DONE?

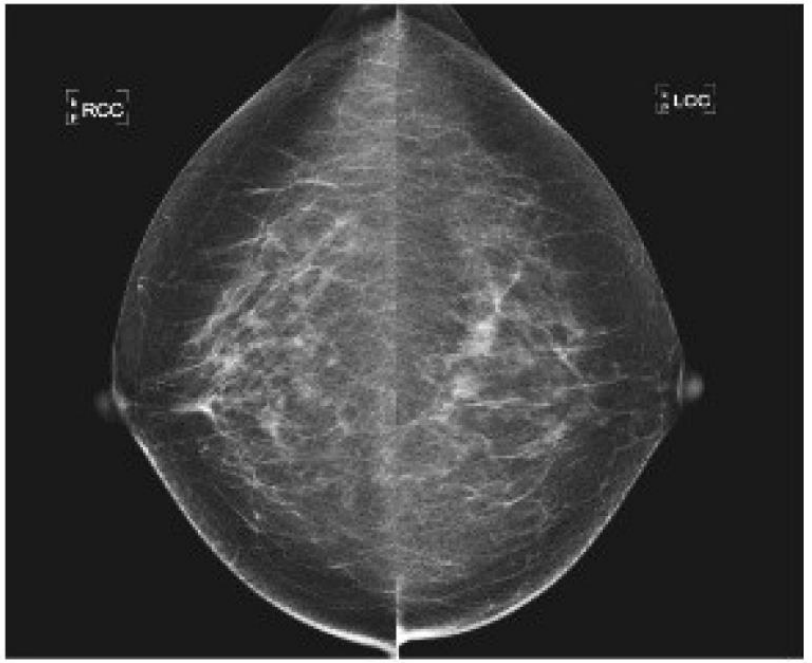
- Breast is briefly compressed between 2 plates attached to the mammogram machine– an adjustable plastic plate on top and a fixed plate on bottom which holds the x-ray film or the digital detector that makes the image

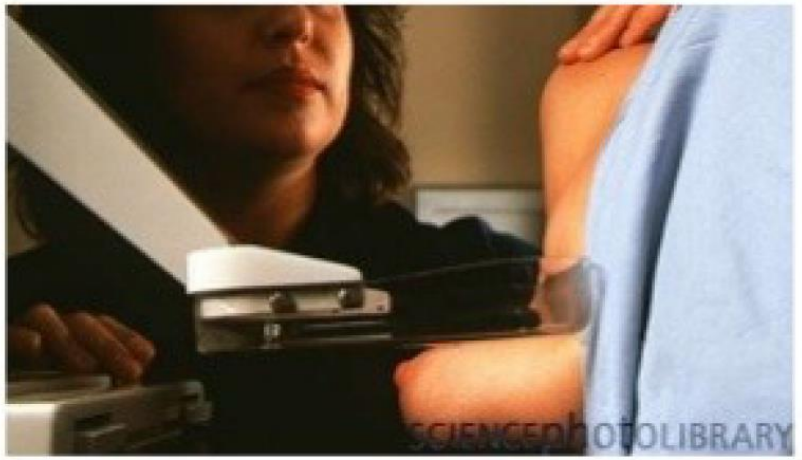
TYPICAL VIEWS

- For screening: Cranio- caudal view(CC) / Medio-lateral oblique(MLO)
- For diagnostic: CC / MLO

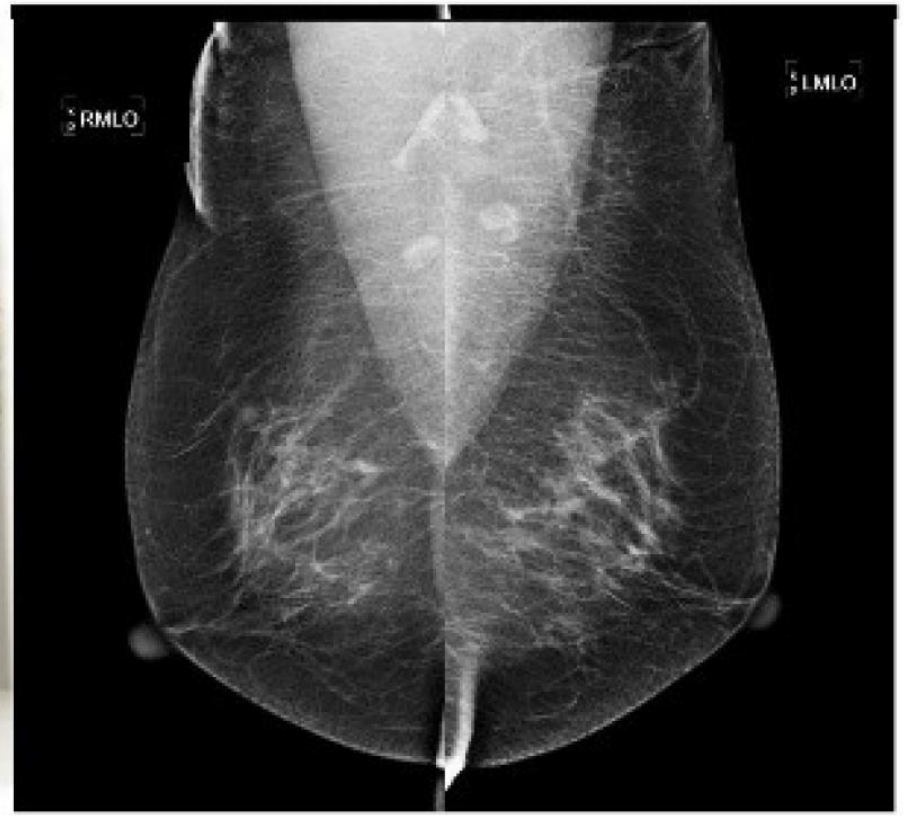
- lateromedial(from side towards center of chest)
- mediolateral(from the center of the chest out)
- Spot compression view

CC view





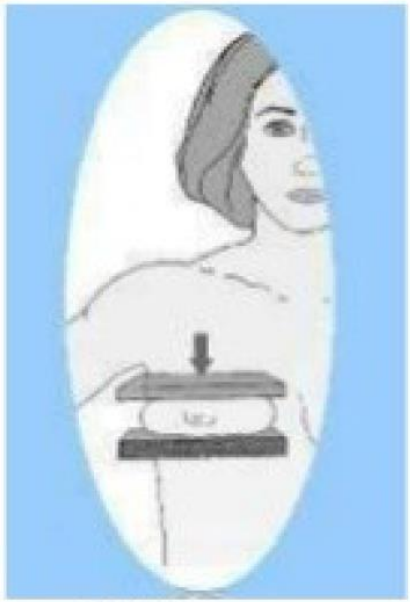
MLO view



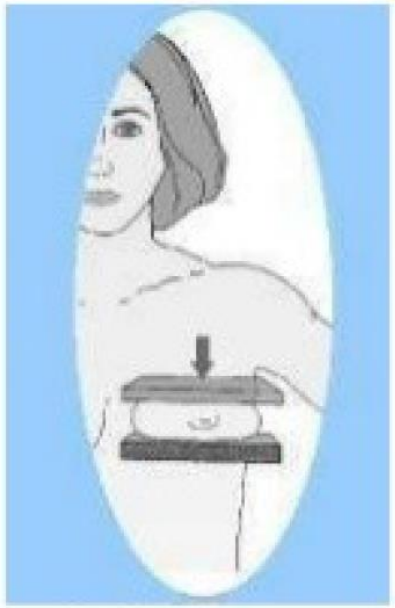
Radiographic views of the breast

Standard views:

- 45* Medio lateral Oblique (MLO view) / Lundgren's view
- Craniocaudal view (CC view)

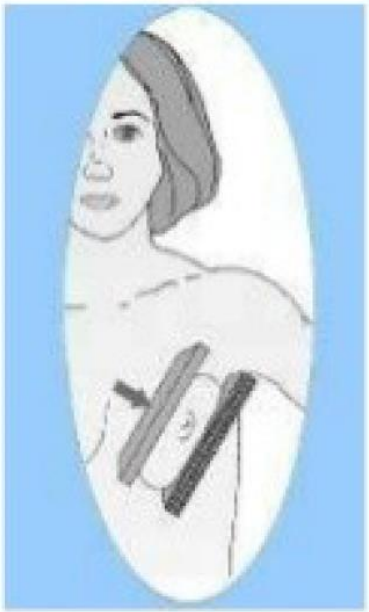


RCC



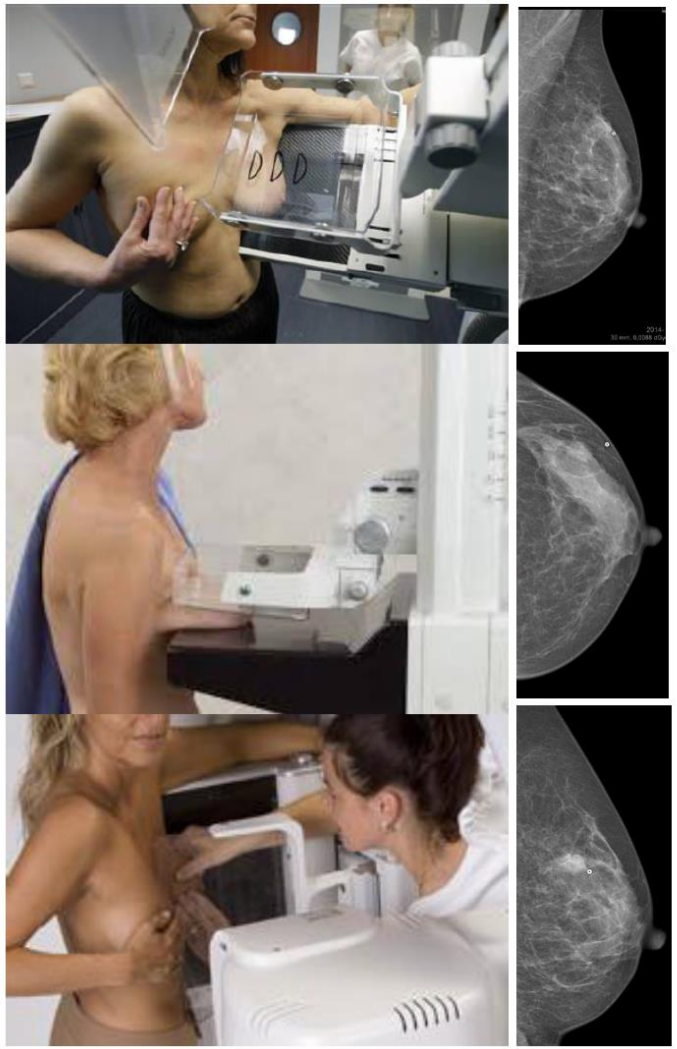
LCC

RMLO

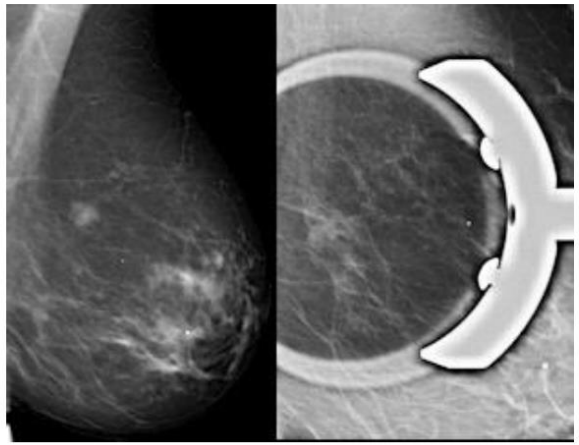


LMLO

MAMMOGRAPHIC VIEWS



- Mediolateral oblique (MLO)



- Spot compression
- Magnification view

- Lateral (ML or LM)


YES, REGULAR MAMMOGRAMS AND EARLY DETECTION WOULD HAVE SAVED YOUR LIFE...
BUT AREN'T YOU GLAD YOU WERE SPARED ALL THAT ANXIETY?
TASK FORCE

MAMMOGRAPHY

What is the most important thing we do in Breast Imaging?

Screening Mammography

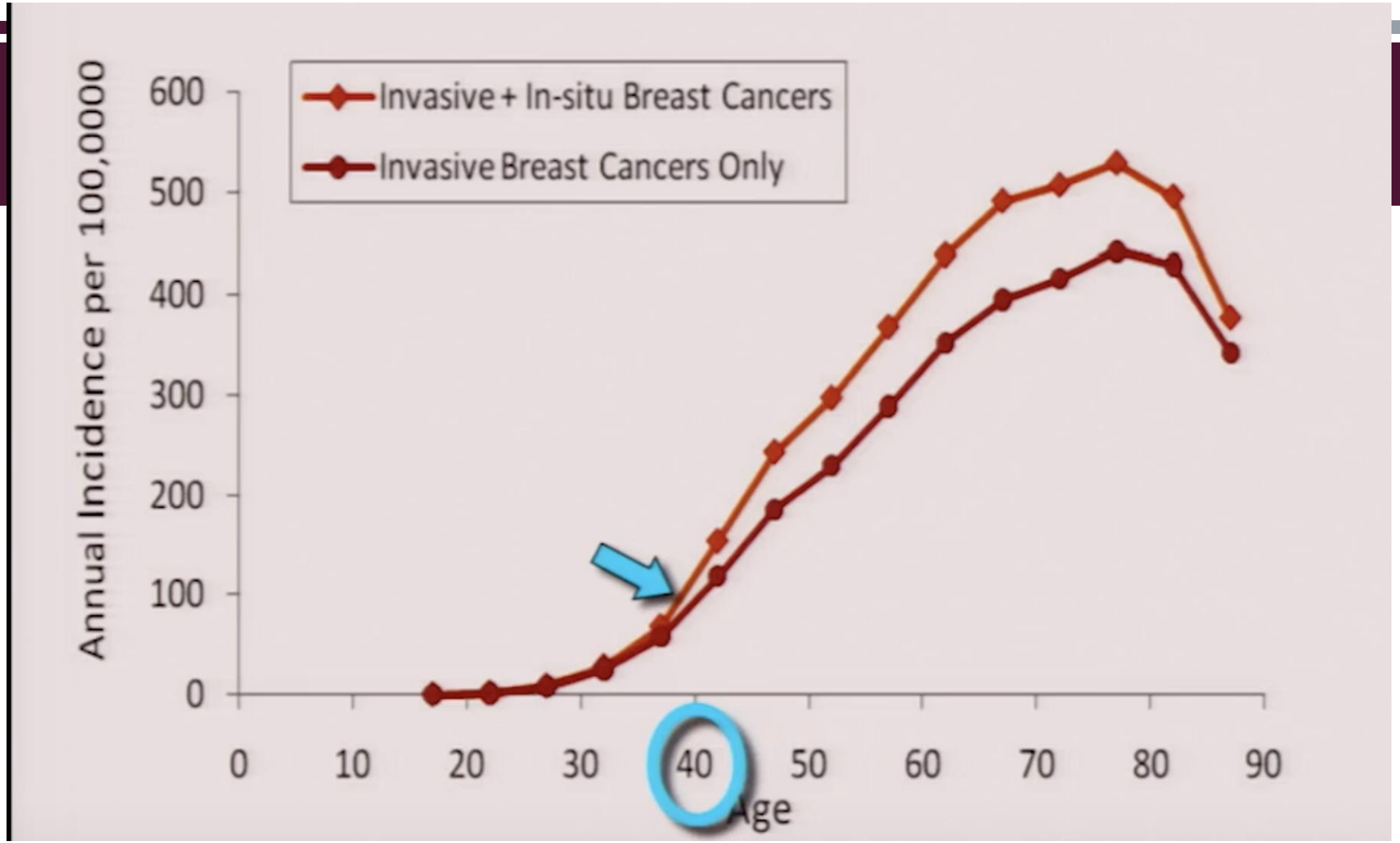
Breast Cancer Screening

Guidelines on breast cancer screening have been issued by the following organizations:

- American Cancer Society (ACS)
- U.S. Preventive Services Task Force (USPSTF)
- American College of Obstetricians and Gynecologists (ACOG)

MEDSCAPE Breast Cancer Guidelines
Updated: Jun 26, 2017
Author: Kathy D Miller, MD;

- The guidelines differ in their recommendations regarding breast ***self-examination*** and ***clinical breast examination***, use of screening mammography in women ***40-49 years old***, age at which to ***discontinue screening mammography***, and ***MRI mammography***.
- All three guidelines recommend routine **screening mammography in asymptomatic, average-risk women aged 50 to 74**, but differ with regard to frequency of screening.


Invasive + In-situ Breast Cancers
Invasive Breast Cancers Only
Annual Incidence per 100,0000
600
500
400
300
200
100
0
0
10
20
30
40
50
60
70
80
90
Age

RISK ASSESSMENT:

- **High risk**(20-25% life time risk): 1. familial high risk
  2. genetic high risk
  3. personal high risk
- **Intermediate risk**(10-20% life time risk): High breast density
  personal history of LCI, AH, LH, breast cancer, DCIS, LCIS
  strong family history
- **Average risk**

WHAT CONSTITUTES "AVERAGE RISK" OF BREAST CANCER?

- No personal history of breast cancer
- No confirmed or suspected genetic mutation known to increase risk of breast cancer (eg, BRCA)
- No history of radiotherapy to the chest at a young age
- No significant family history of breast cancer
- No prior diagnosis of benign proliferative breast disease
- No significant mammographic breast density

National Comprehensive Cancer Network guidelines

The NCCN on screening in average-risk women includes the following recommendations [8]:

- Clinical breast examinations every 1-years from age 25-39, then annually from age 40 on
- Begin annual screening mammography at age 40 years.
- Consider tomosynthesis (three-dimensional mammography)

Breast examination

It is acceptable for women to choose not to do breast self-examination (BSE) or to do BSE regularly (monthly) or irregularly. Beginning in their early 20s, women should be told about the benefits and limitations of BSE. Whether a woman ever performs BSE, the importance of prompt reporting of any new breast symptoms to a health professional should be emphasized. Women who choose to do BSE should receive instruction and have their technique reviewed on the occasion of a periodic health examination

The ACS does not recommend clinical breast examination for breast cancer screening in average-risk women at any age

ACS recommendations are as follows:

- Women should begin regular screening mammography at age 45 years (strong recommendation)
- Women aged 45-54 years should be screened annually (qualified recommendation)
- Women 55 years and older should transition to biennial screening or have the opportunity to continue screening annually (qualified recommendation)
- Women should have the opportunity to begin annual screening at 40-44 years of age (qualified recommendation)
- Women should continue screening mammography as long as their overall health is good and they have a life expectancy of 10 years or longer (qualified recommendation)

UpToDate®

- For women under age 40, screening is not warranted since the incidence of breast cancer is low and the performance characteristics of mammography are poor. (See 'Age under 40' above.)

- For women age 40 to 49, we raise the topic of screening and individualize the decision based on patient preferences and values. A woman may opt for screening if she has substantial concerns about breast cancer risk and accepts the possibility of a false-positive result or overdiagnosis and the resulting evaluation and treatment. Another woman may find that the frequency of false positives and overdiagnosis provides a compelling reason to defer screening. Although screening in the 40s appears favorable when considering the number of years of life potentially saved, for an average-risk woman, the number of breast cancer deaths prevented is relatively low. (See 'Age 40 to 49' above and 'Frequency of screening with mammography' above.)

- For women age 50 to 74, we suggest screening (**Grade 2B**). (See 'Age 50 to 74' above and 'Frequency of screening with mammography' above.)

- For women age 75 and older, we suggest screening only if their life expectancy is at least 10 years (**Grade 2C**). (See 'Age 75 and older' above and 'Frequency of screening with mammography' above.)

- For average-risk women who decide to be screened, we recommend screening with mammography rather than other modalities (**Grade 1B**). While ultrasound and magnetic resonance imaging (MRI) are useful for diagnostic evaluation of abnormal findings noted on screening mammography, we do not use these modalities to screen average-risk women. We suggest a mammography screening interval of every two years (**Grade 2C**). More frequent screening is not likely to improve detection rates and is associated with a higher rate of false positives. (See 'Other imaging modalities' above and 'Frequency of screening with mammography' above.)

- We suggest not using clinical breast examination (CBE) (**Grade 2C**) or breast self-examination (BSE) (**Grade 2B**) as part of screening of average-risk women. Women should be educated about breast health awareness. (See 'Role of clinical breast examination' above and 'Role of breast self-examination' above.)

ACS recommendations for breast MRI screening as an adjunct to mammography

Recommend annual MRI screening (based on high risk of breast cancer and high sensitivity of MRI*)
BRCA mutation
First-degree relative of *BRCA* carrier, but untested
Lifetime risk >20 to 25% or greater, as defined by BRCAPRO or other models that are largely dependent on family history
Recommend annual MRI screening (based on high risk of breast cancer)
Radiation to chest between age 10 and 30 years
Li-Fraumeni syndrome and first-degree relatives
Cowden and Bannayan-Riley-Ruvalcaba syndromes and first-degree relatives
Insufficient evidence to recommend for or against MRI screening$^{\Delta}$
Lifetime risk 15 to 20%, as defined by BRCAPRO or other models that are largely dependent on family history
Lobular carcinoma in situ or atypical lobular hyperplasia
Atypical ductal hyperplasia
Heterogeneously or extremely dense breast on mammography
Women with a personal history of breast cancer, including ductal carcinoma in situ
Recommend against MRI screening (based on expert consensus opinion)
Women at <15% lifetime risk

ACS: American Cancer Society; MRI: magnetic resonance imaging.

* Evidence from nonrandomized screening trials and observational studies.

Δ Payment should not be a barrier. Screening decisions should be made on a case-by-case basis, as there may be particular factors to support MRI.

BIRADS LEXICON

BIRADS	INFERENCE	RISK OF MALIG.	TYPICAL EXAMPLES
0	Needs additional imaging evaluation		
1	Negative/ Normal		
2	Benign Findings. No further evaluation needed		•Fat containing. •Benign Intramammary LN •Benign Calcifications
3	Probably Benign. Short term Follow up is suggested	=< 2 %	Round, oval or lobulated lesion with circumscribed margins.

4	Suspicious Abnormality. Biopsy should be considered	3 – 94 %	
5	Highly suggestive of malignancy Appropriate intervention to be taken	> 95%	Irregular shaped, spiculated margins.
6	Biopsy proven Malignancy		

PALPABLE BREAST LUMP ???
(DIAGNOSTIC MAMMOGRAM)

PHYSICAL EXAMINATION

- Malignant VS benign mass???
- Psuedomass : prominent rib, costochondral junction, prominent fat lobule, or discrete ridge of normal fibroglandular tissue.

Mammography is recommended as the first imaging modality in the evaluation of palpable breast findings in women 40 years old and older

[redacted]. A radiopaque marker should be placed over the site of clinical concern. If the patient has undergone recent (≤ 6 months) bilateral mammography, only ipsilateral mammography is indicated. In addition to craniocaudal and mediolateral oblique whole-breast mammographic views of the affected breast, spot compression and magnification views are typically obtained of the area of clinical concern.

If mammography reveals a clearly benign cause of the palpable abnormality, such as a calcified involuting fibroadenoma, lymph node, lipoma, hamartoma, galactocele, or oil cyst, or if only fatty tissue is present in the area of concern, no further imaging is needed. For all other mammographic findings, including masses with probably benign or suspicious features, further evaluation with targeted ultrasound is indicated.

Normal mammographic findings are not sufficient to rule out malignancy in a nonfatty breast. If there is no mammographic finding at the site of the palpable lump, further workup with targeted ultrasound is required.

ULTRASOUND

It is the primary imaging modality for women younger than 40 years presenting with a palpable breast mass and is a critical adjunct to mammography for older patients.

A woman with a palpable lump corresponding to a clearly benign finding at targeted ultrasound, such as simple cyst, nonpathologic lymph node, lipoma, sebaceous cyst, clustered microcysts, or duct ectasia, can safely undergo clinical follow-up without short-interval imaging follow-up, needle aspiration, or biopsy.

When both **mammographic and ultrasound** findings are **negative** in the evaluation of a palpable breast mass, the negative predictive value is high, ranging from

97% to 100%.

However, **any highly suspicious mass** found at clinical examination should be **biopsied**, regardless of negative imaging findings, because of the extremely small but present risk of malignancy.

There is no evidence to support the utility of breast **MRI** for patients with palpable masses and no evidence that breast MRI leads to clinical benefit for such patients.

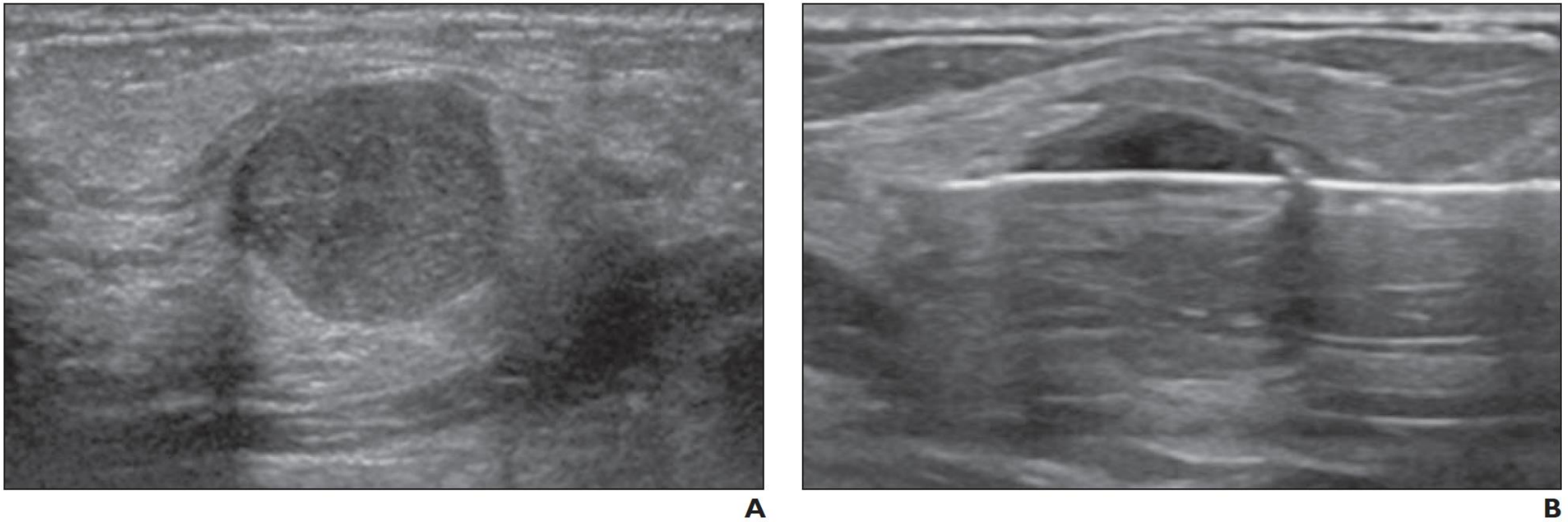
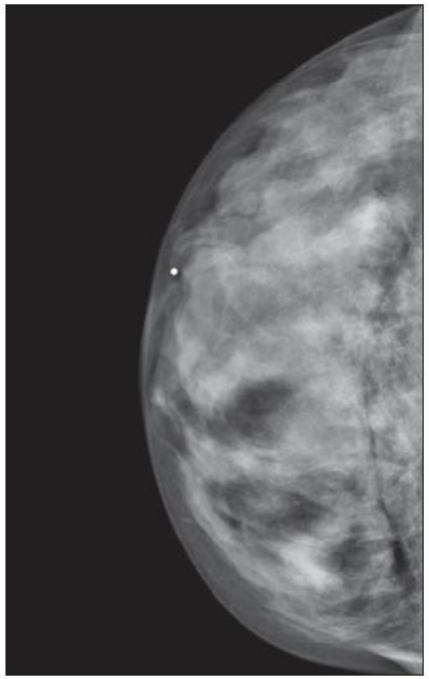


Fig. 1—24-year-old woman with palpable right breast lump.
A, Targeted ultrasound image at site of clinical concern shows 14-mm solid mass with oval shape, circumscribed margins, and uniformly hypoechoic echotexture. BI-RADS category 3 assessment was made.
B, Ultrasound image shows appearance during core needle biopsy performed because patient preferred not to wait for 6-month follow-up ultrasound. Histopathologic analysis confirmed fibroadenoma, which was concordant with imaging findings.



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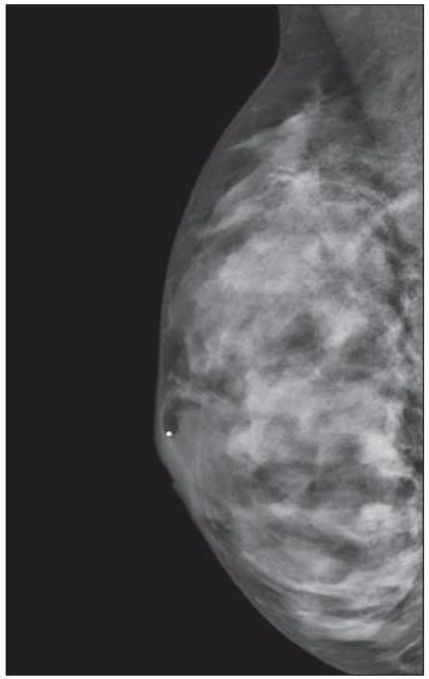

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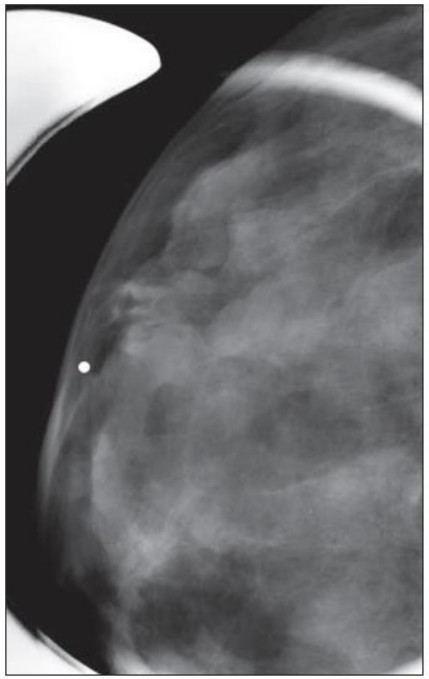

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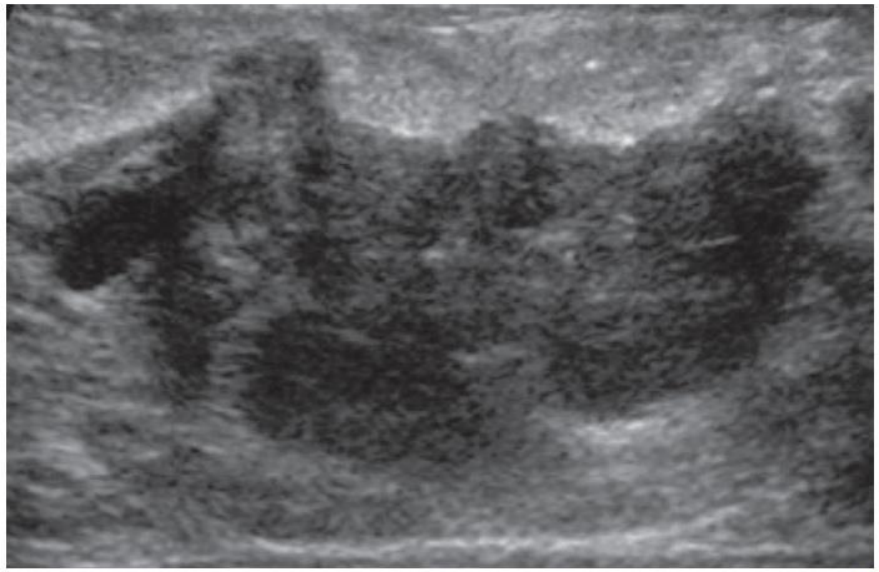
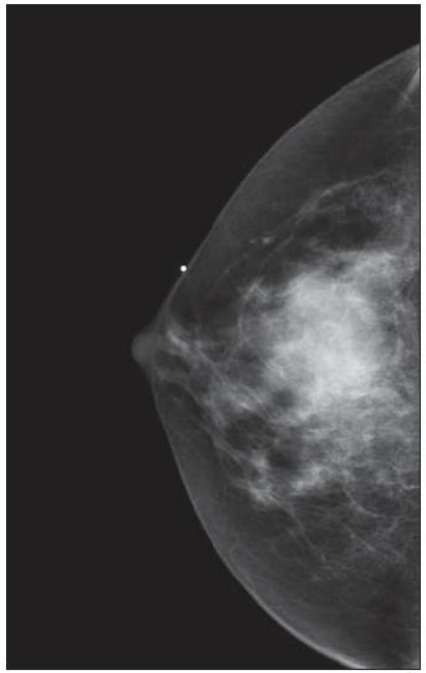
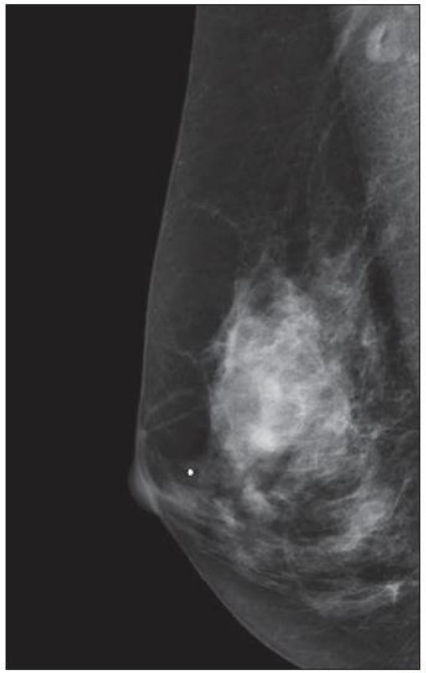


D

Fig. 2—41-year-old woman with palpable right breast lump.
A–C, Whole-breast craniocaudal (**A**) and mediolateral oblique (**B**) and spot-magnification craniocaudal (**C**) mammograms show extremely dense breast tissue and no visible abnormality at site of clinical concern (*BB marker*).
D, Targeted ultrasound image at site of clinical concern shows 32-mm solid hypoechoic mass with irregular shape and angular and indistinct margins. BI-RADS category 4 assessment was made. Histopathologic analysis of ultrasound-guided core needle biopsy specimen confirmed invasive ductal carcinoma.



A



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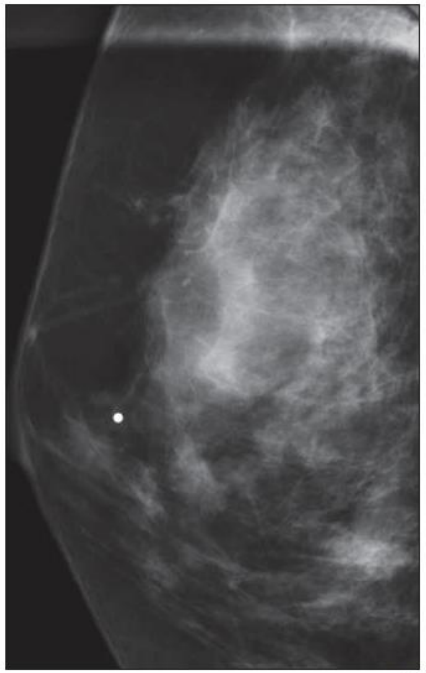

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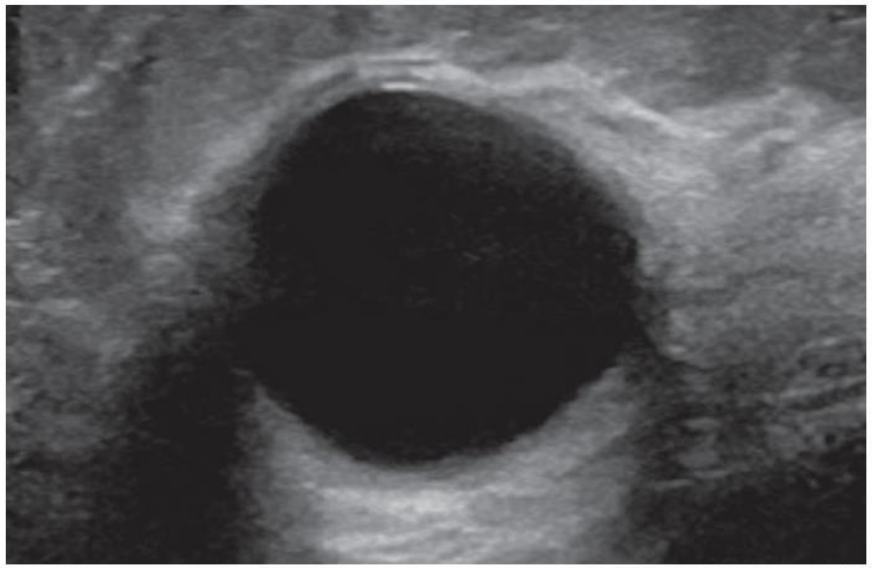


D

Fig. 3—55-year-old woman with palpable right breast lump.
A-C, Whole-breast craniocaudal (**A**) and mediolateral oblique (**B**) and spot-magnification mediolateral (**C**) mammograms show heterogeneously dense breasts and oval mass with partially circumscribed, partially obscured margins corresponding to area of clinical concern (*BB marker*).
D, Targeted ultrasound image at site of clinical concern shows 28-mm simple cyst. BI-RADS category 2 (benign) assessment was made with recommendation for routine clinical follow-up.

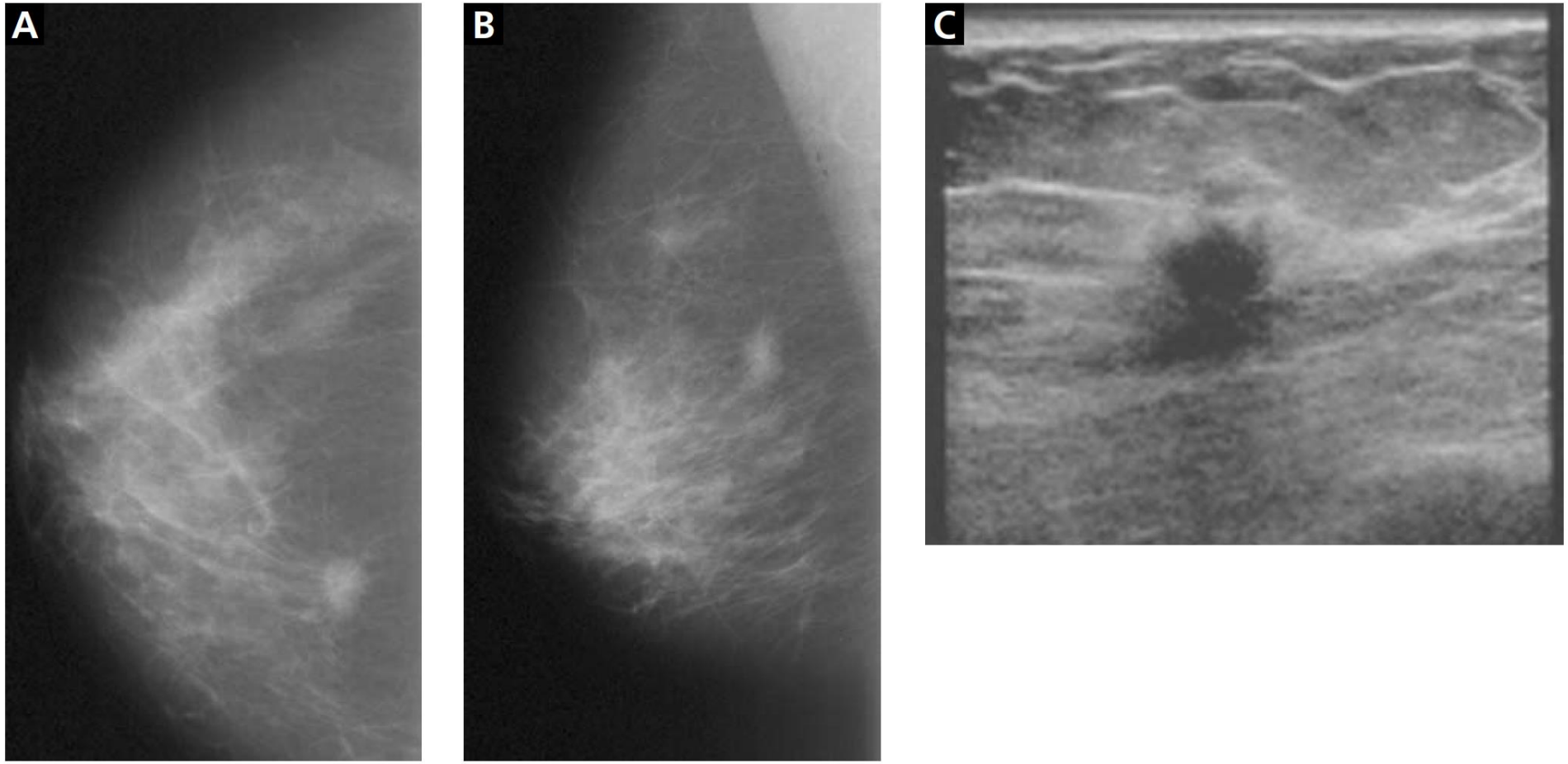
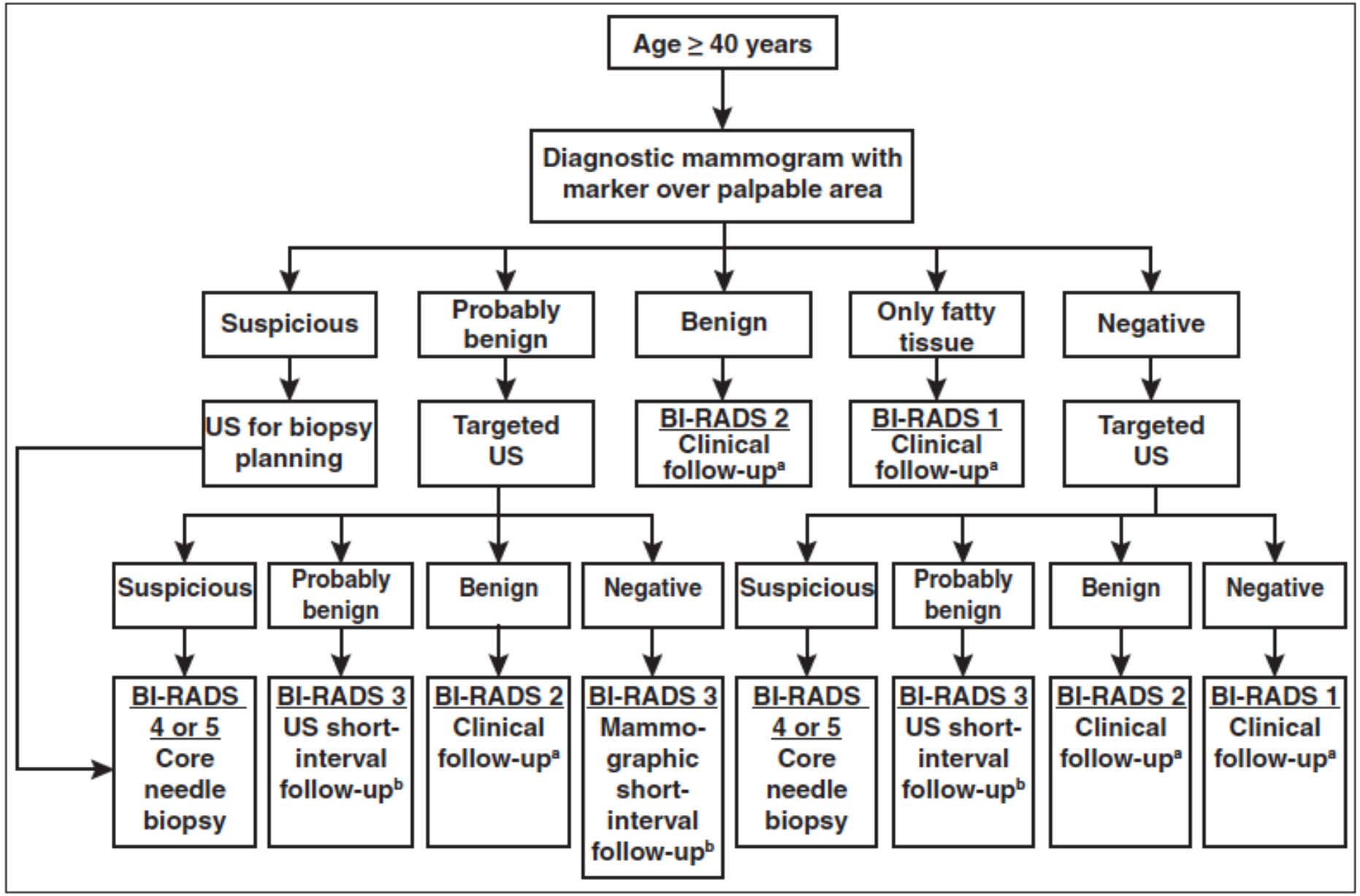
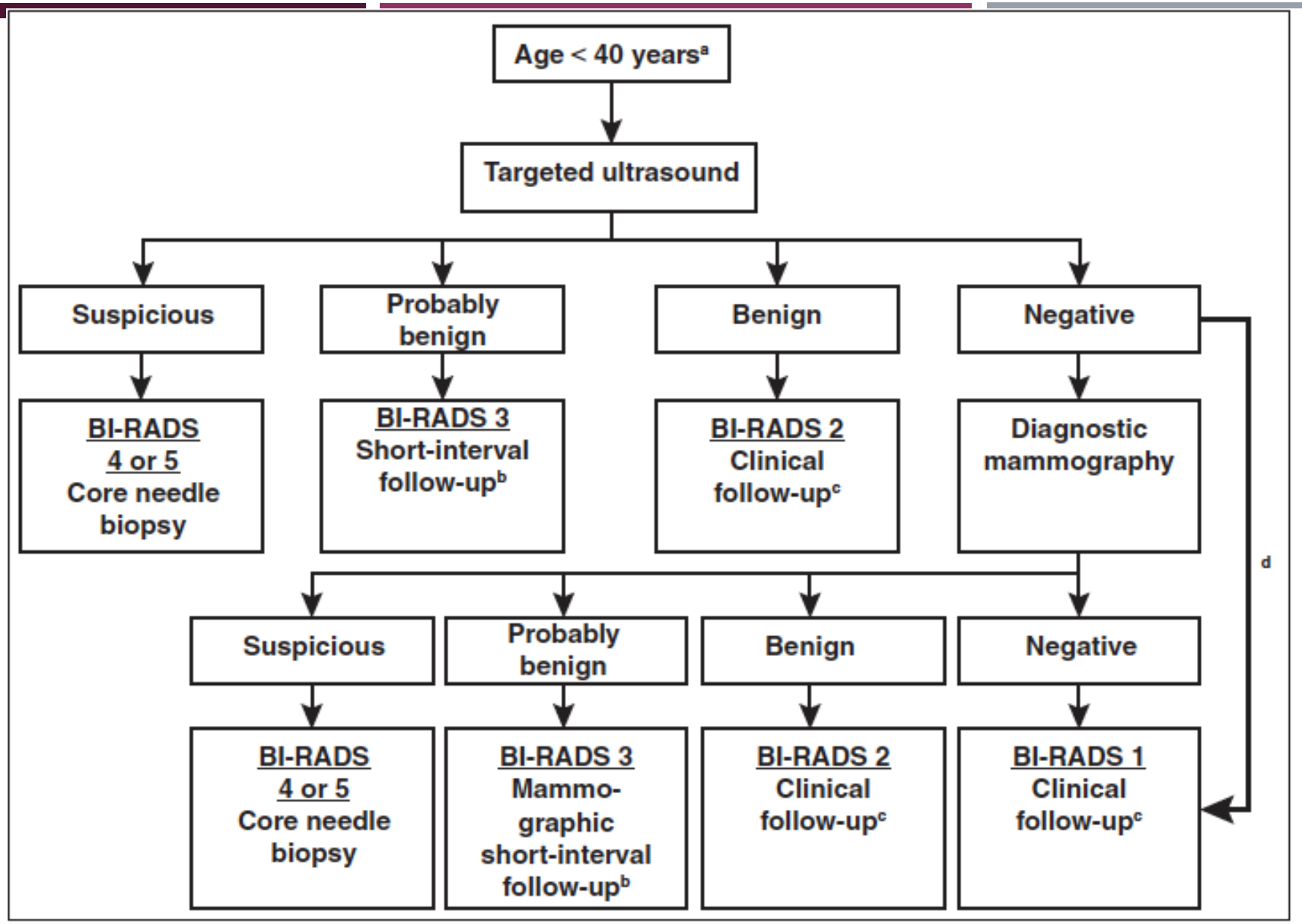


FIGURE 4. Infiltrating ductal carcinoma. Craniocaudal (A) and mediolateral oblique (B) mammographic views of the right breast show an irregular, mildly spiculated, high-density lesion in the posterior, medial breast. Ultrasonography (C) shows an irregularly shaped hypoechoic mass which is taller than wide (a profile tending to indicate malignancy) and has mild posterior acoustic shadowing.


Age ≥ 40 years
Diagnostic mammogram with marker over palpable area
Suspicious
Probably benign
Benign
Only fatty tissue
Negative
US for biopsy planning
Targeted US
BI-RADS 2 Clinical follow-up[a]
BI-RADS 1 Clinical follow-up[a]
Targeted US
Suspicious
Probably benign
Benign
Negative
Suspicious
Probably benign
Benign
Negative
BI-RADS 4 or 5 Core needle biopsy
BI-RADS 3 US short-interval follow-up[b]
BI-RADS 2 Clinical follow-up[a]
BI-RADS 3 Mammo-graphic short-interval follow-up[b]
BI-RADS 4 or 5 Core needle biopsy
BI-RADS 3 US short-interval follow-up[b]
BI-RADS 2 Clinical follow-up[a]
BI-RADS 1 Clinical follow-up[a]


Age < 40 years[a]
Targeted ultrasound
Suspicious
Probably benign
Benign
Negative
BI-RADS 4 or 5 Core needle biopsy
BI-RADS 3 Short-interval follow-up[b]
BI-RADS 2 Clinical follow-up[c]
Diagnostic mammography
Suspicious
Probably benign
Benign
Negative
BI-RADS 4 or 5 Core needle biopsy
BI-RADS 3 Mammo-graphic short-interval follow-up[b]
BI-RADS 2 Clinical follow-up[c]
BI-RADS 1 Clinical follow-up[c]
d

BREAST IMAGING OF THE PREGNANT AND LACTATING PATIENT

PREGNANCY- ASSOCIATED BREAST CANCER

- pregnancy- associated breast cancer, which is defined as any cancer that occurs during pregnancy or within 1 year of childbirth.

IMAGING MODALITIES

- Ultrasound
- Sonography is the first-line modality in the workup of a palpable breast mass in a pregnant or lactating patient.
- All patients with a dominant palpable breast mass that persists for 2 weeks or longer should be evaluated with a targeted ultrasound examination.
- Any suspicious mass identified on ultrasound can be promptly evaluated with ultrasound- guided core needle biopsy.

- If a highly suspicious breast mass is found or if core needle biopsy results are positive for malignancy, evaluation of the ipsilateral axilla as well as bilateral whole breast ultrasound should also be considered.

MAMMOGRAPHY

- Mammography is generally safe during pregnancy and lactation.
- The radiation dose from bilateral two view digital and film-screen mammography studies is less than 3 mGy, which is roughly equivalent to 7 weeks of background radiation.
- If a patient happens to undergo mammography before she is aware of her pregnancy status, she should be assured that the risk to the early fetus is very minimal.
- The sensitivity of mammography in detecting pregnancy-associated breast cancer is less than that of ultrasound, ranging from 78% to 90%

ROUTINE ANNUAL SCREENING MAMMOGRAPHY

- Routine annual screening mammography is not performed during pregnancy. In women older than 40 years old, mammography screening should resume approximately 3 months after cessation of lactation to allow the breast parenchyma to fully involute and return to baseline density.
- Screening mammography is offered to very-high-risk lactating patients 3 months after delivery.

MRI

- Contrast-enhanced MRI is not recommended during pregnancy.
- In lactating patients with newly diagnosed breast cancer, contrast-enhanced MRI may be safely performed to evaluate the extent of disease.
- Breast should be pumped and discarded for 24 hours after the administration of gadolinium.

دستورالعمل غربالگری و پیشگیری از سرطان پستان (ویژه پزشک وماما)

گروه هدف برنامه، زنان ۲۰ تا ۶۹ ساله می باشند که براساس روش غربالگری بایستی به شرح زیر پیگیری گردند:

*از سن ۲۰ تا ۶۹ سالگی بایستی کلیه زنان به انجام خودآزمائی ماهانه پستان تشویق و ترغیب گردند.

*از سن ۲۰تا ۶۹سالگی بایستی کلیه زنان جهت انجام معاینه بالینی سالانه پیگیری گردند.

☜معاینه توسط پزشک زن یا ماما، هر سال از سن۲۰ سالگی شروع و ضمن انجام آن، بایستی خودآزمائی پستان به فرد آموزش داده شود.

*از سن ۴۰ سالگی بایستی زنان برای انجام ماموگرافی پیگیری و ارجاع گردند. در سن ۴۰ سالگی یک ماموگرافی پایه انجام و در صورت نبود مشکل، به فاصله هر دو سال تکرار می شود. در صورت وجود خطر، ماموگرافی سالانه بایستی تکرار شود.

*در صورت ابتلای یکی از نزدیکان درجه یک خانواده به سرطان پستان، انجام ماموگرافی از ۵ سال زودتر توصیه می شود خصوصاً در صورتی که ابتلا در اقوام، پایین تر از سن ۴۰ بوده باشد بایستی شروع شود.

*پس از ۶۹ سالگی نیازی به غربالگری نیست زیرا در سنین بالا رشد تومور بسیار کند است و تفاوتی در بقایای عمر بین توده هایی که با خودآزمائی پستان تشخیص داده می شود و توده هائی که با ماموگرافی تشخیص داده می شود وجود ندارد.

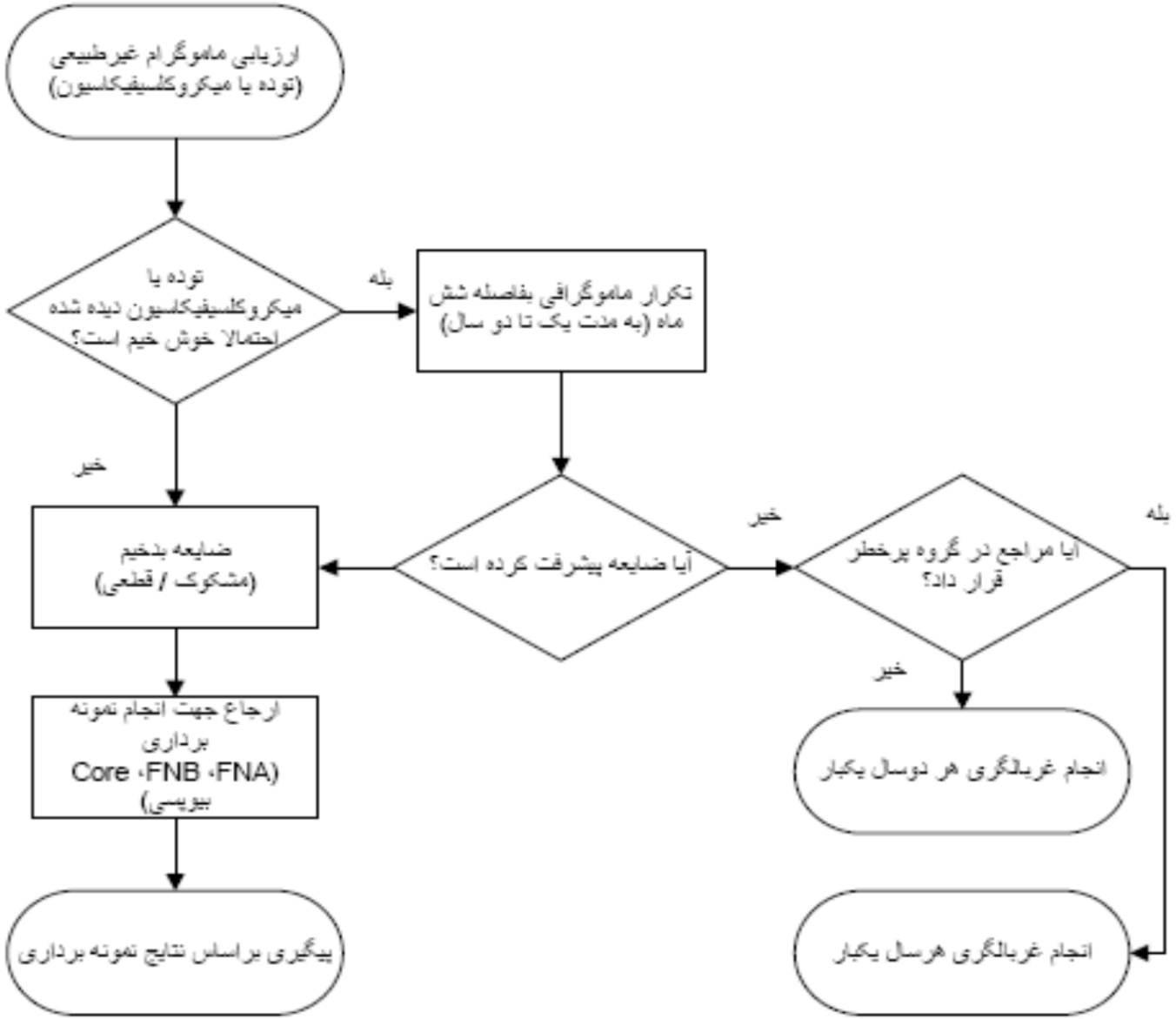
*ماموگرافی در سنین ۵۰ تا ۶۰ سال با کاهش واضحی در مرگ و میر زنان بدلیل سرطان پستان همراه است. بنابراین پیگیری این گروه سنی از اهمیت ویژه ای برخوردار است.

*در سنین زیر ۴۰ سال روش ترجیحی بررسی پستان در صورت شک بالینی، سونوگرافی است.

*زنان در سنین قبل از یائسگی بهتر است پستان های خود را هر ماه ۷ تا ۱۰ روز پس از شروع دوره قاعدگی معاینه کنند. در زنان یائسه انتخاب یک تاریخ مشخص، روش مفیدی برای بخاطر آوردن زمان انجام ماهیانه خودآزمائی پستان می باشد. به زنان باید آموزش داد که هر گونه اختلال یا تغییر را به پزشک خود گزارش دهند. اگر معاینه پزشک تائید کننده یافته های بیمار نباشد، بایستی ماه بعد، معاینه بالینی را تکرار نمود.

تعریف مورد سرطان پستان: هرمورد سرطان پستان کشف شده در فرآیند غربالگری از طریق معاینه بالینی یا ماموگرافی که منجر به نمونه برداری از بافت مشکوک به توده سرطانی شده و در بررسی هیستوپاتولوژیکی سلول های سرطانی مشاهده شده باشد.

نمودار جریان فرایند بررسی و اقدام در مورد ماموگرام غیرطبیعی



موارد زیر از موارد کاربرد سونوگرافی است:

۱. وجود توده در خانم زیر ۳۰ سال شیرده یا حامله
۲. کمک به تکمیل اطلاعات در ماموگرافی
۳. تعیین نوع توده (کیستیک توپر) با دقت ۹۵ تا ۱۰۰ درصد
۴. جهت هدایت پروب برای تعیین محل پونکسیون در کیست ها
۵. بررسی نشت سیلیکون در پروتزهای پستان
۶. در صورتی که بیمار توده ای در پستان خود لمس کند ولی پزشک لمس نکند و ماموگرافی نشان ندهد سونوگرافی کمک کننده است.