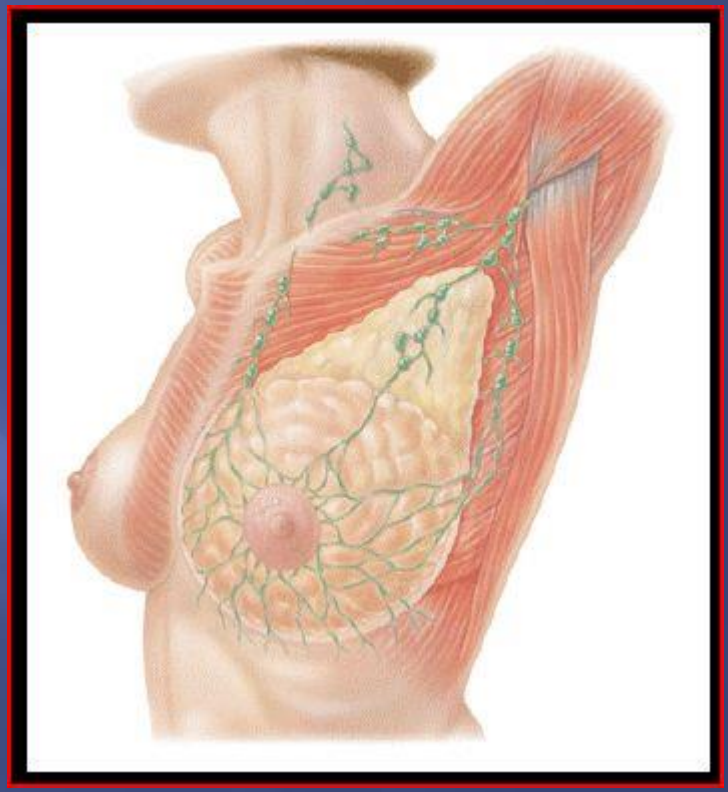
BREAST DISEASE

Dr.Amal Al-Abdulkareem

Breast Modified Sebaceous Glands

- **Upper border**
  - Collar bone.
- **Lower border.**
  - 6^{th} or 7^{th} rib.
- **Inner Border**
  - Edge of sternum.
- **Outer border**
  - Mid-axillary line.



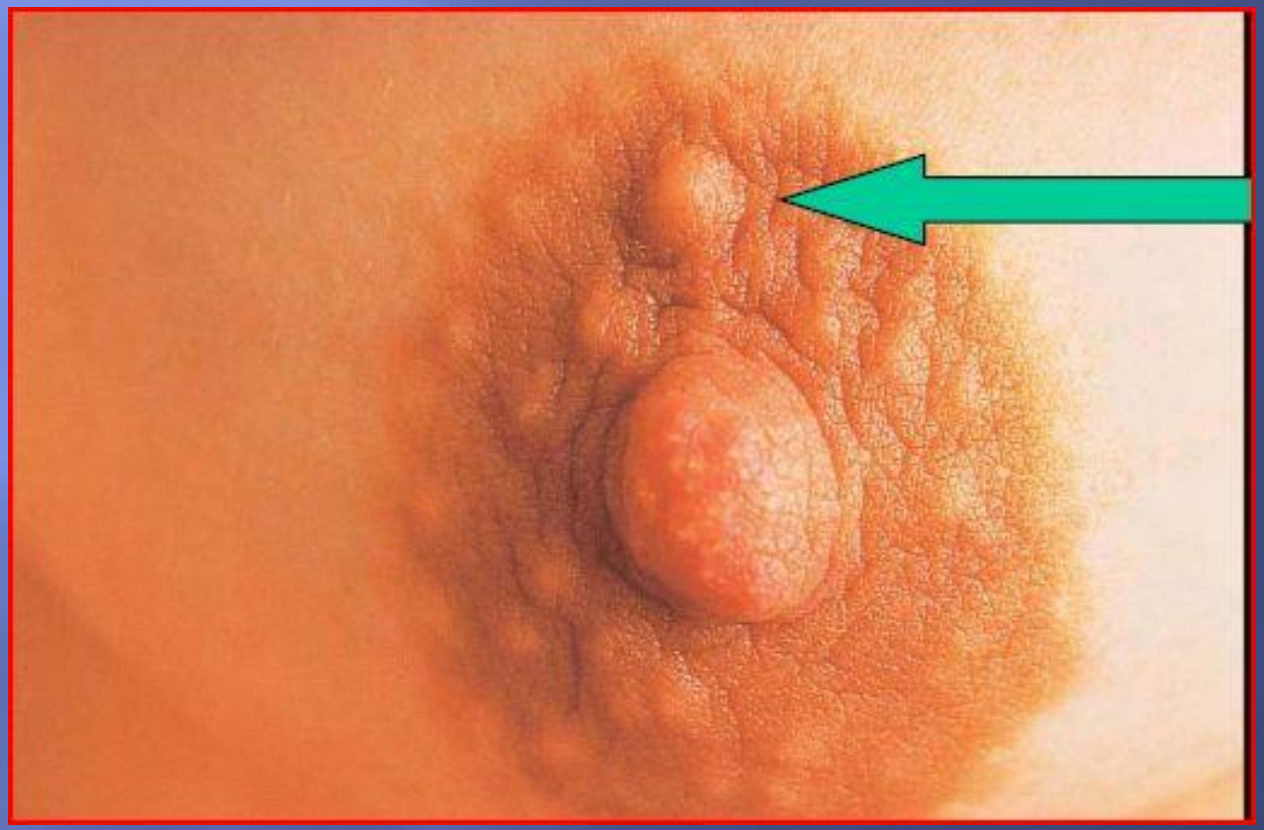
Breast Divisions
5 Segments

- **Four Quadrants**
  - By horizontal and vertical lines.
- **Tail of Spence**
- **Majority** of benign or malignant tumors in the Upper Outer Quadrant

External Anatomy of the Breast

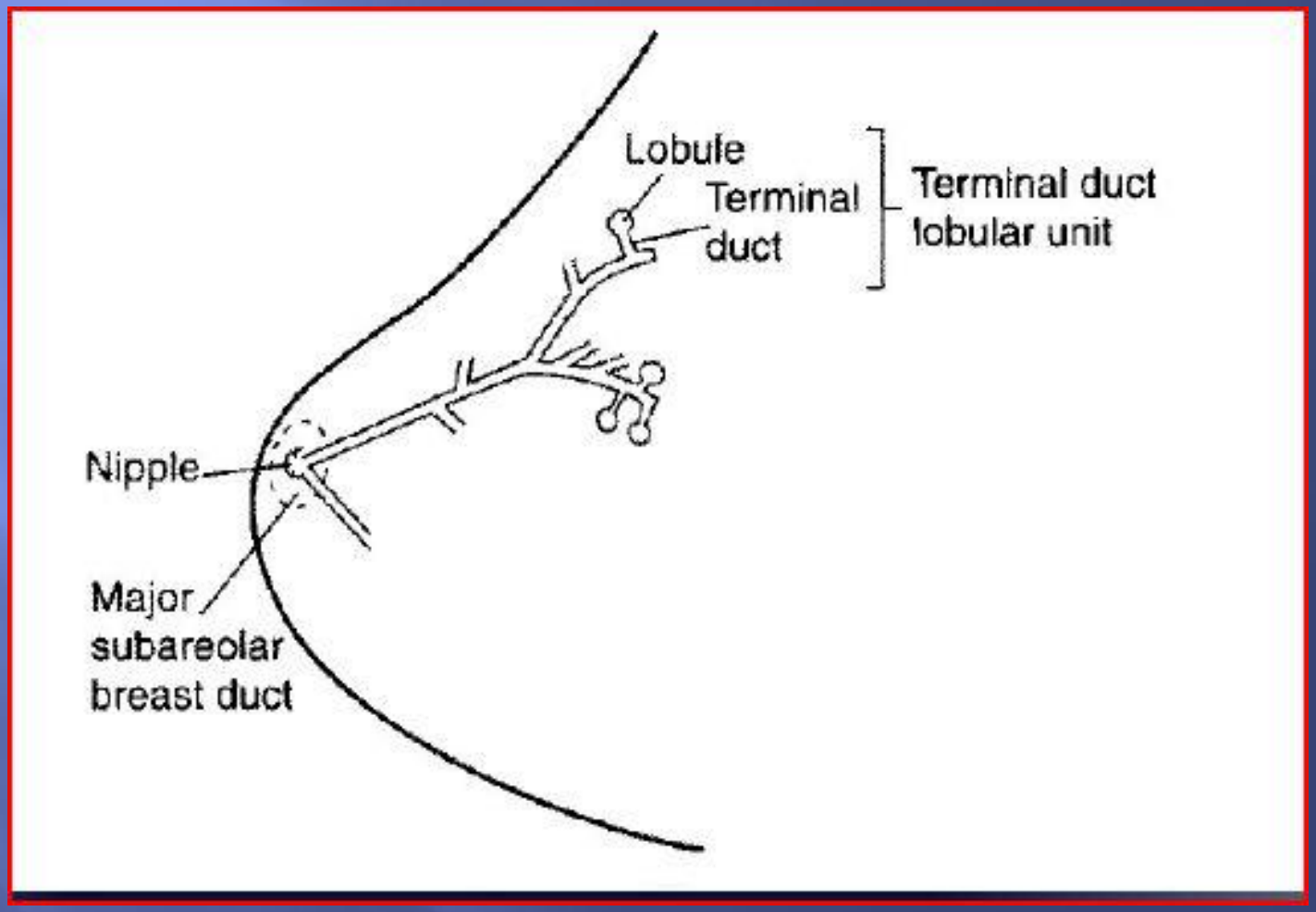
- **Nipple**
  - -Pigmented, Cylindrical
  - -4th inter-costal space
    - * at age 18
- **Areola**
  - -Pigmented area surrounding nipple
- **Glands of Montgomery**
  - -Sebaceous glands within the areola
  - -Lubricate nipple during lactation

Montgomery's Tubercles



Blocked Montgomery Tubercle

Terminal Lobular Unit and Branching Systems of Ducts



Anatomy

Axillary lymph nodes defined by pectoralis minor muscle:

- Level 1 – lateral
- Level 2 – posterior
- Level 3 – medial

Long Thoracic Nerve

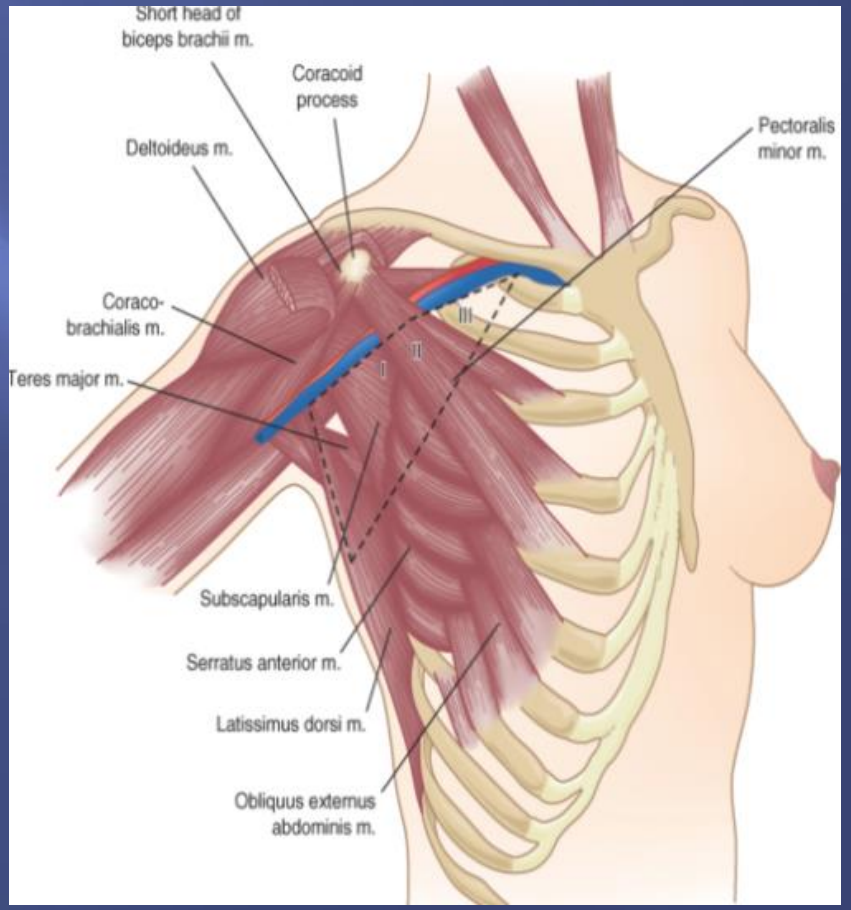
- Serratus anterior

Thoracodorsal Nerve

- Latissimus Dorsi

Intercostalbrachial Nerve

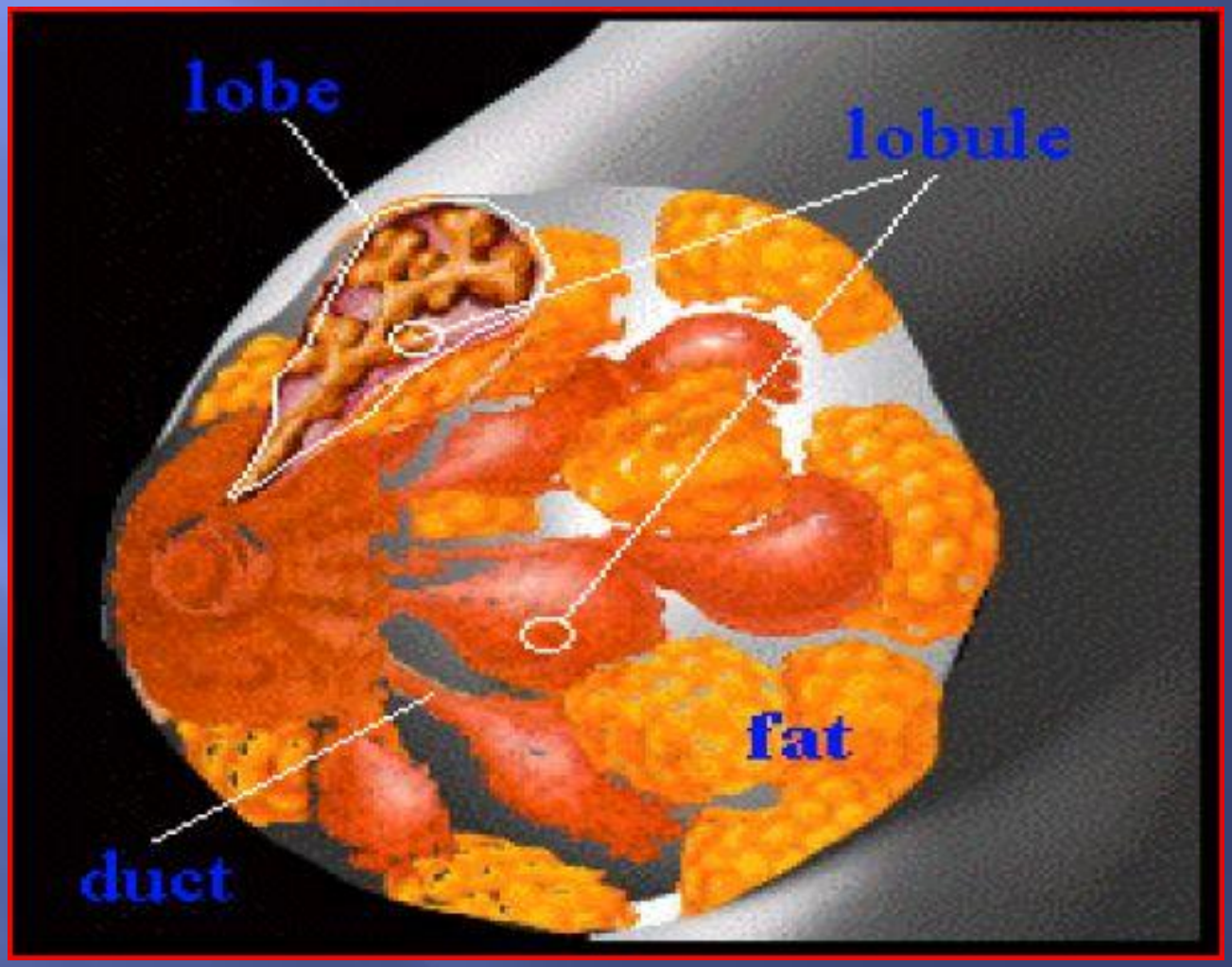
- Lateral cutaneous
- Sensory to medial arm & axilla



Tissue Types

- **Glandular Tissue**
  - Milk producing tissue
- **Fibrous Tissue**
- **Fatty Tissue**

Internal Anatomy of the Breast



Fibrous Tissue

- **Cooper's Ligaments**

  -Suspensor ligaments

  - Extending through the breast to underlying muscle
  - Benign or malignant lesions may affect these ligament
  - Skin retraction or dimpling

Fatty Tissue

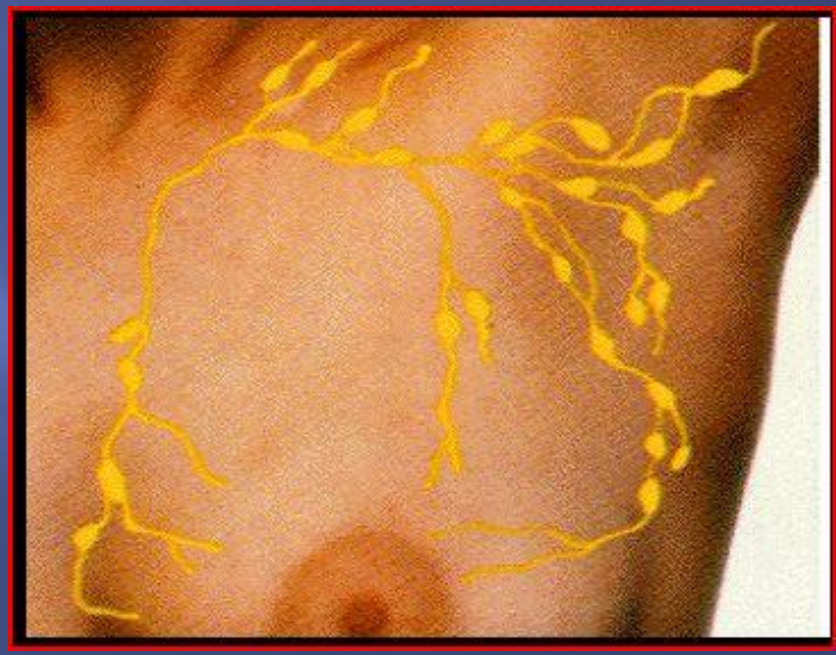
- Subcutaneous and retro-mammary fat
- Bulk of breast.
- No fat beneath areola and nipple

Chest Muscles

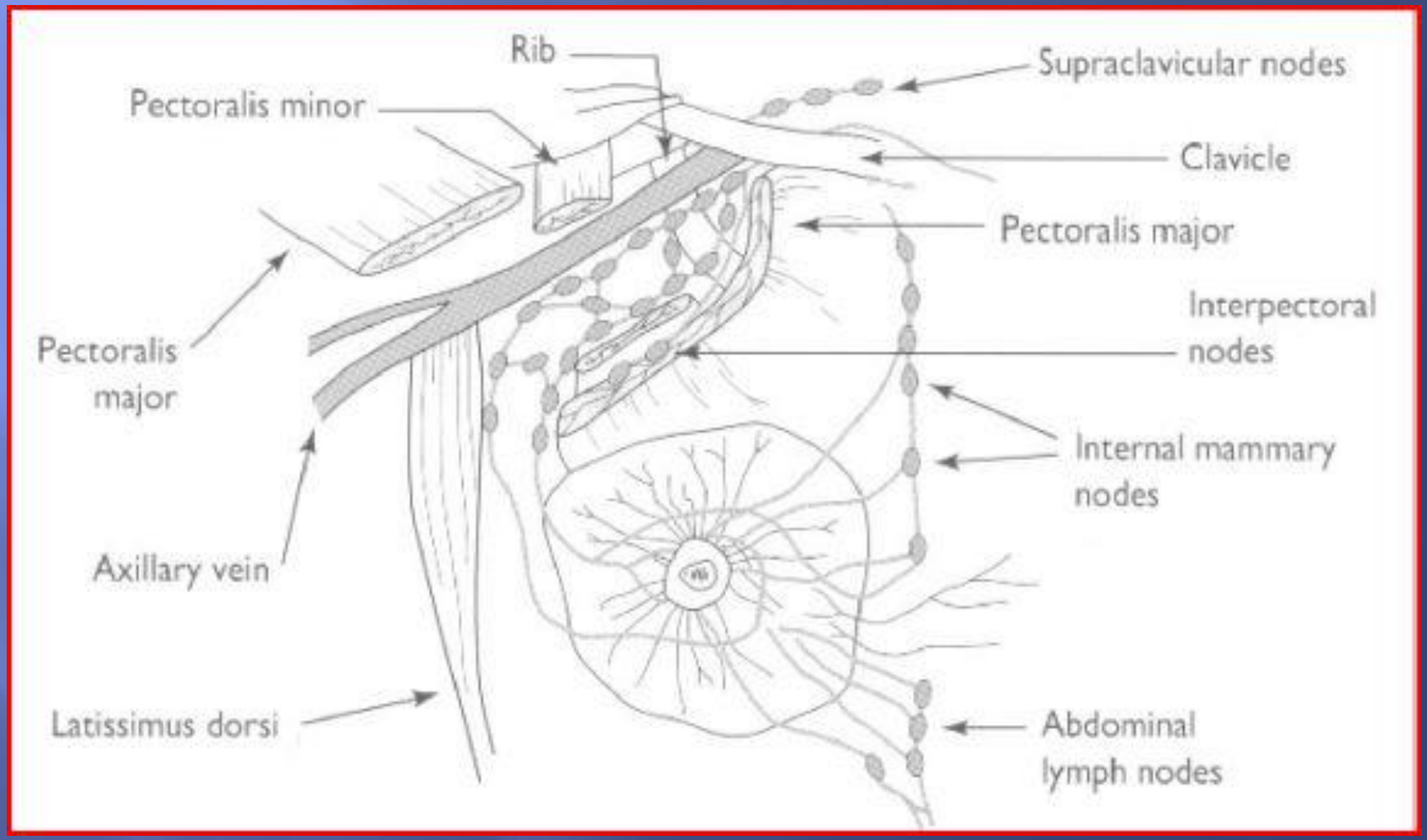
- Pectoralis Major/Minor
- Serratus Anterior
- Latissimus Dorsi
- Subscapularis
- External Oblique
- Rectus Abdominus

Lymph Nodes

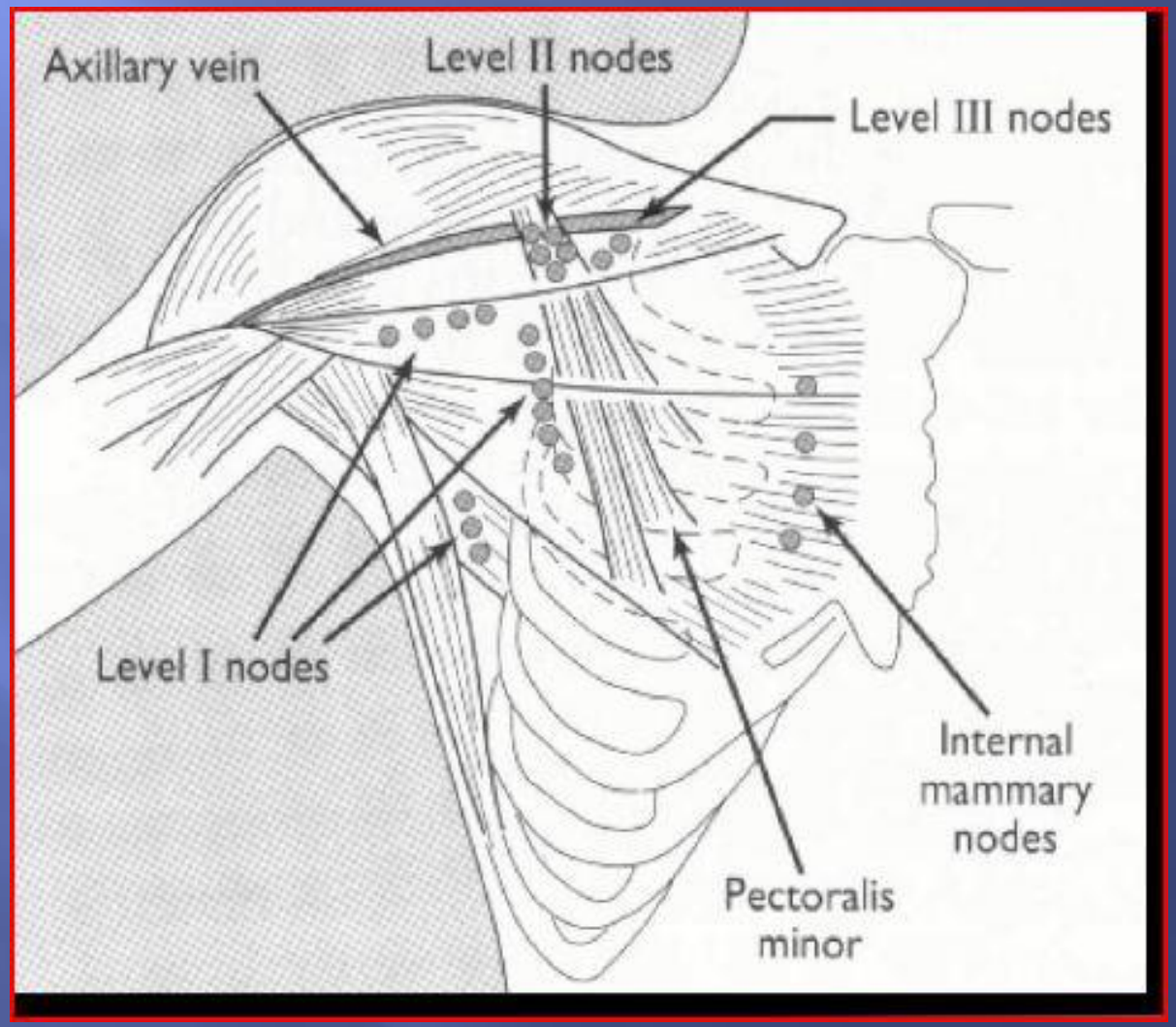
- Most drain towards axilla.
- Superficial lymphatic nodes drain skin .
- Deep lymphatic nodes drain mammary lobules



Lymph Drainage of Breast



Levels of Axillary Nodes



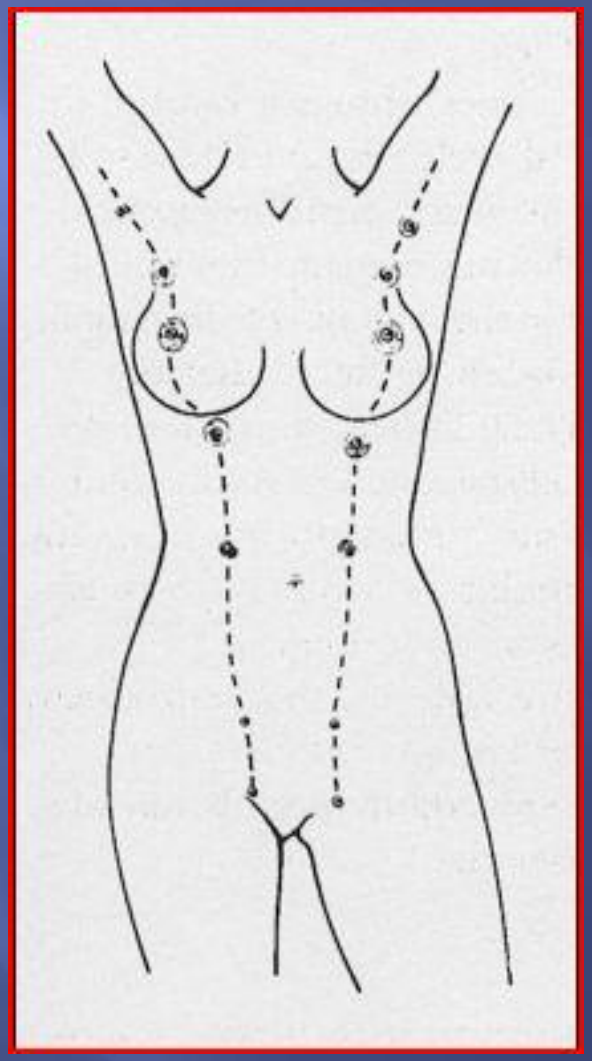
Lymph Nodes

- **Palpate ALL nodes**
  - From distal arm to under arm with deep palpation
- **Axillary**
- **Supraclavicular**
- **Infra-clavicular**
- **Nodes deep in the chest or abdomen**
- **Infra-mammary ridge**
  - Shelf in the lower curve of each breast

Normal Variations of Breast

- Accessory breast tissue.
- Supernumerary nipples.
- Hair
- Lifelong Asymmetry

Milk Lines
Sites of Accessory Nipples and Breasts



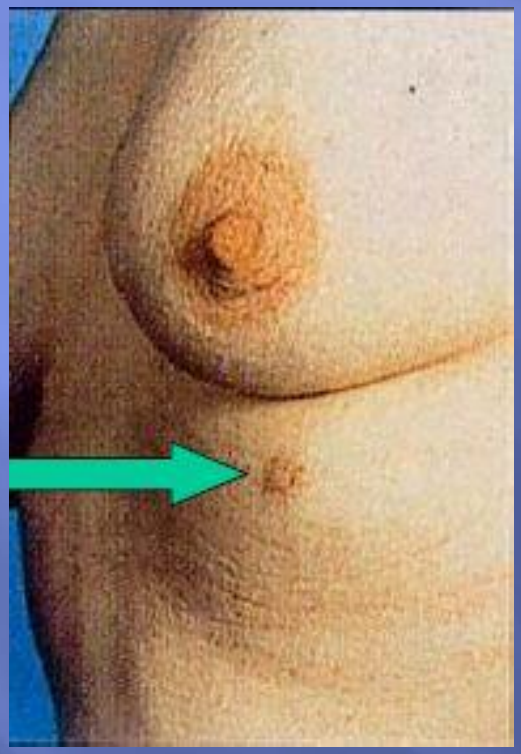
Accessory Beast Tissue

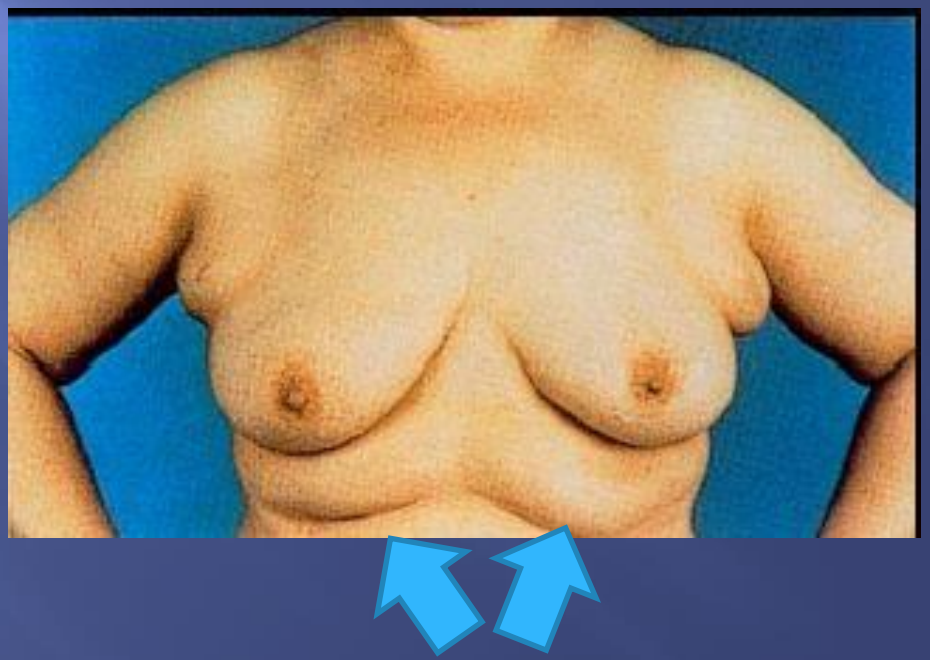
Accessory Tissue

Biopsy

Accessory Nipple

Accessory Nipple and Bilateral Accessory Breasts





Breast with Two Nipples

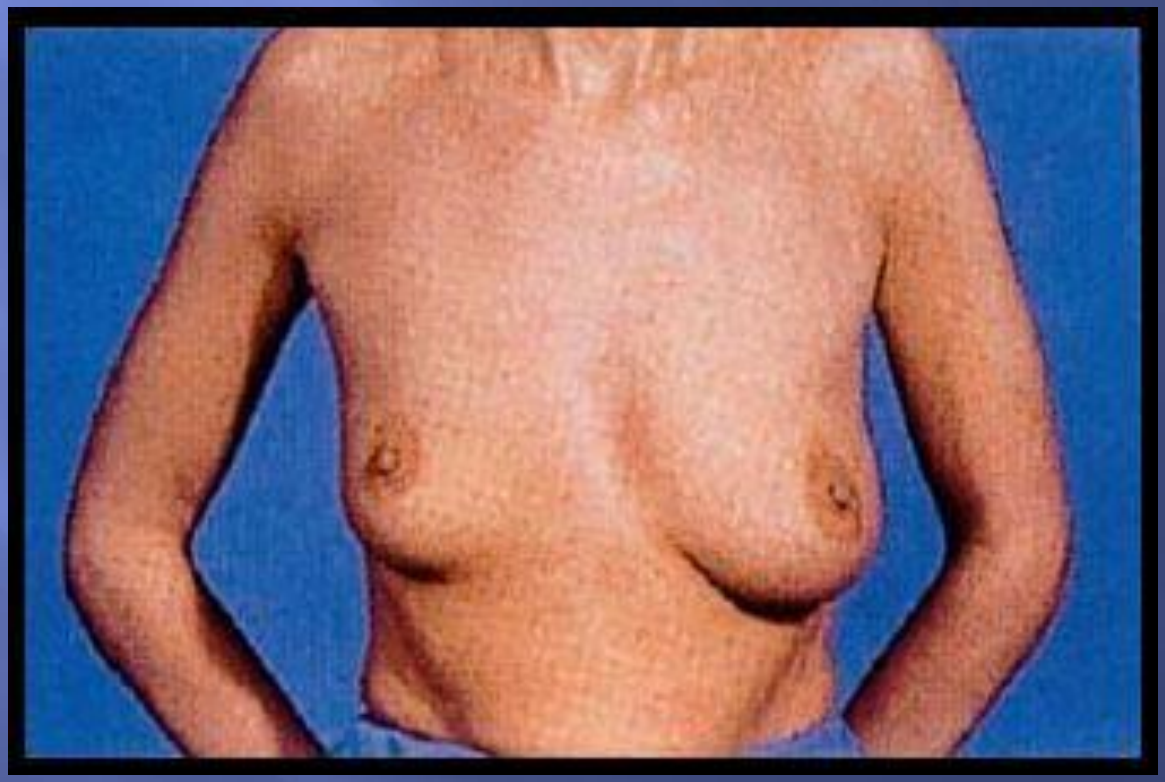
Breast Hair

Physiology of Breast

- **Puberty**
  - Need estrogen and progesterone
- **Estrogen**
  - Growth and appearance
  - Milk-producing system
- **Progesterone**
  - Lobes and alveoli
  - Alveolar cells become secretory
- **Asymmetry is common.**

Breast Asymmetry

Breast Asymmetry



Physiology of Breast

- **Pregnancy and lactation**
  - Glandular tissue displaces connective tissue
  - Increase in size
  - Nipples prominent and darker
  - Mammary vascularization increases
  - Colostrum present
  - Attain Tanner Stage V with birth

Physiology of Breast

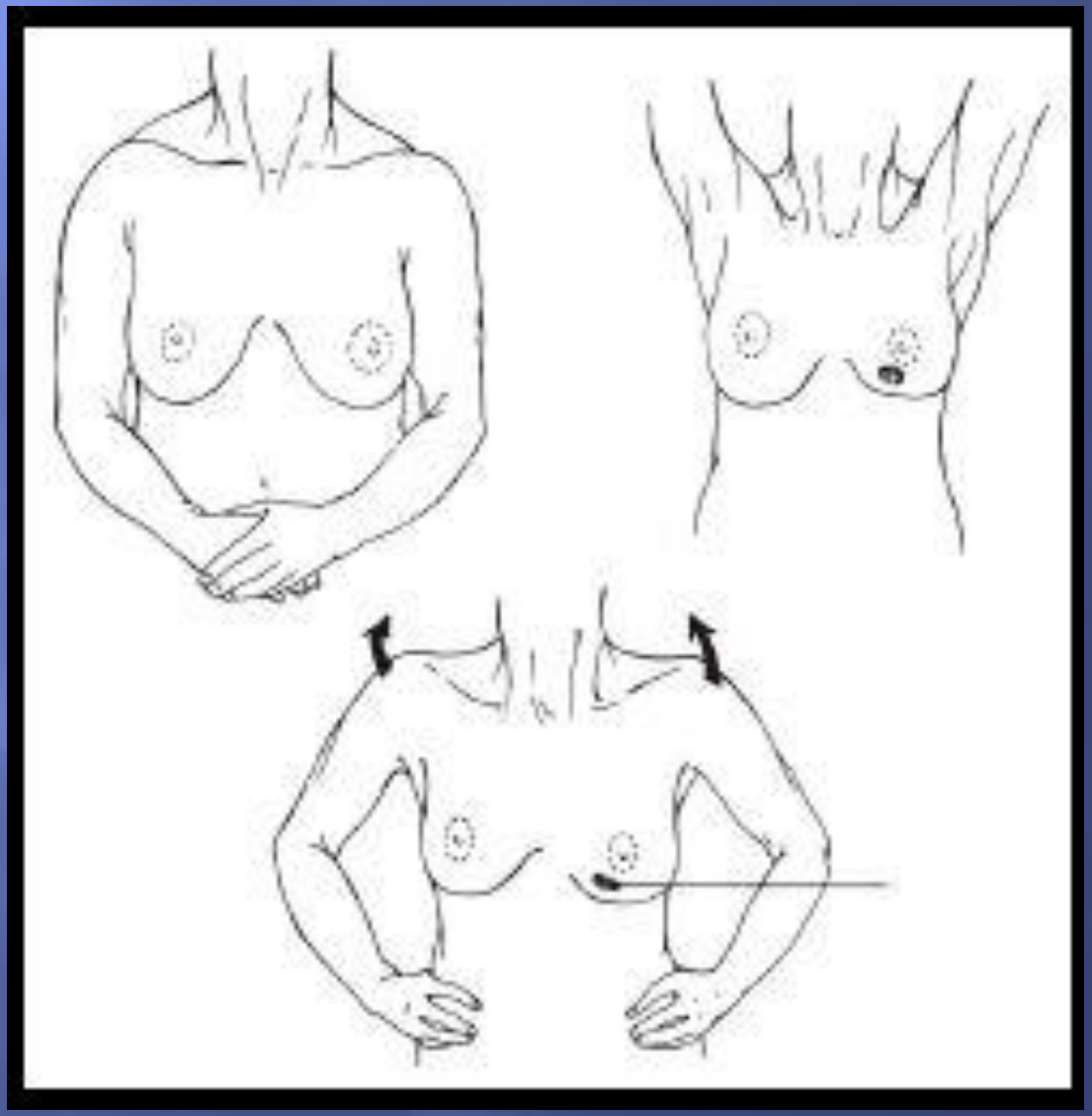
- **Aging**
  - **Perimenopause**
    - Decrease in glandular tissue
    - Loss of lobular and alveolar tissue
  - **Flatten, elongate, pendulous**
  - **Infra-mammary ridge thickens**
  - **Suspensory ligaments relax**
  - **Nipples flatten**
  - **Tissue feels "grainy"**

Clinical Breast Exam

Clinical Exam

- Inspection
  - Skin
  - Symmetry
  - Masses
- Palpable
  - Gland
  - Axilla, Supraclavicular spaces
  - Nipple-areola complex

Inspect Both Breasts

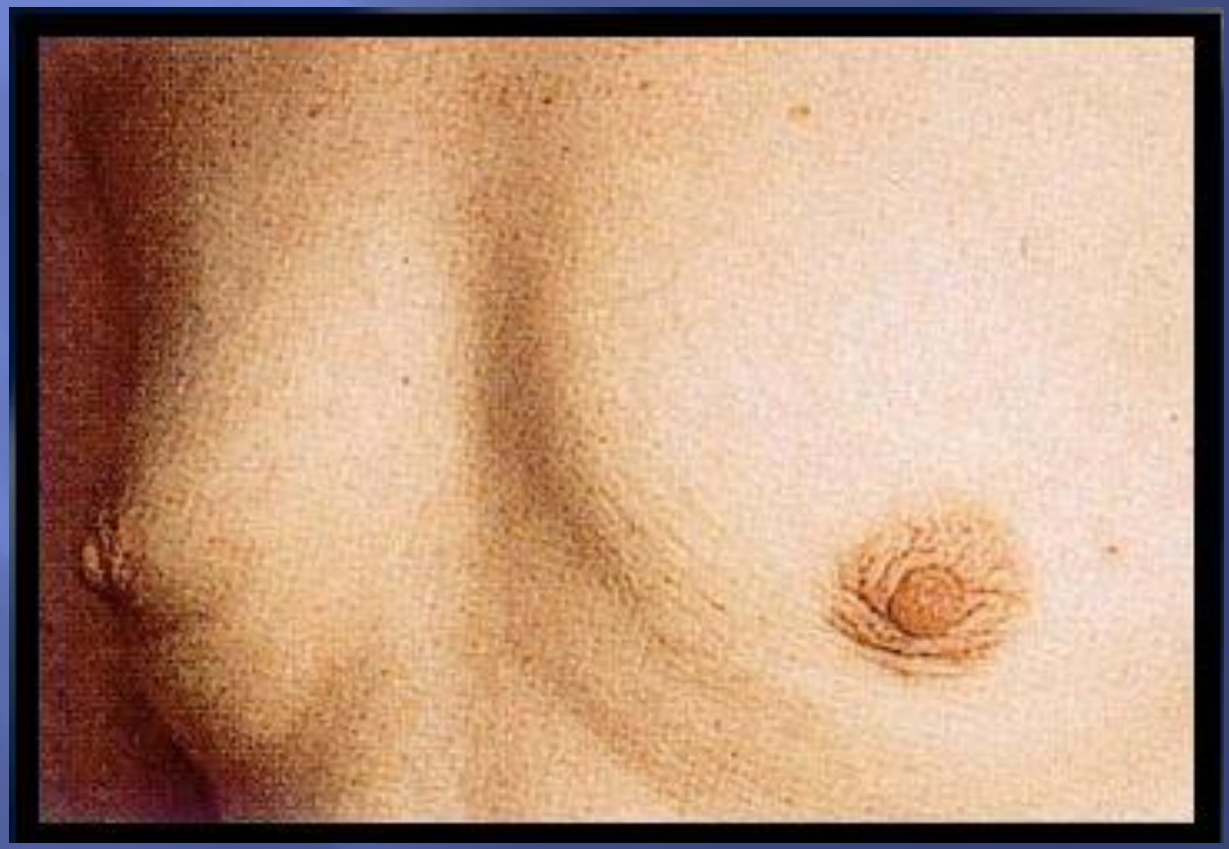


Skin Dimpling and Change in Contour

Dimpling due to Carcinoma

Change in contour due to carcinoma

Skin Dimpling Both Breasts Involution Due to Aging

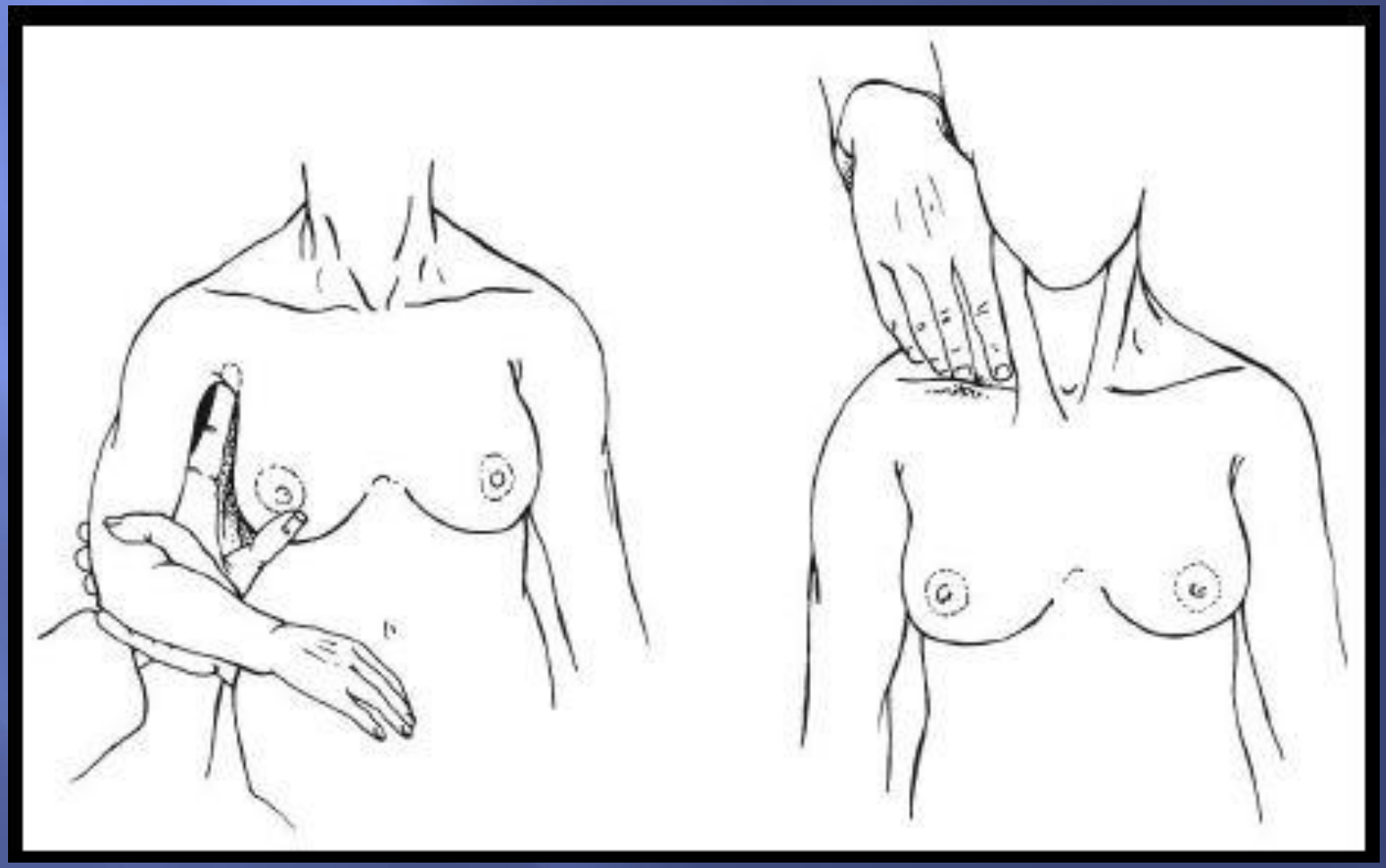


Skin Dimpling
Breast Infection

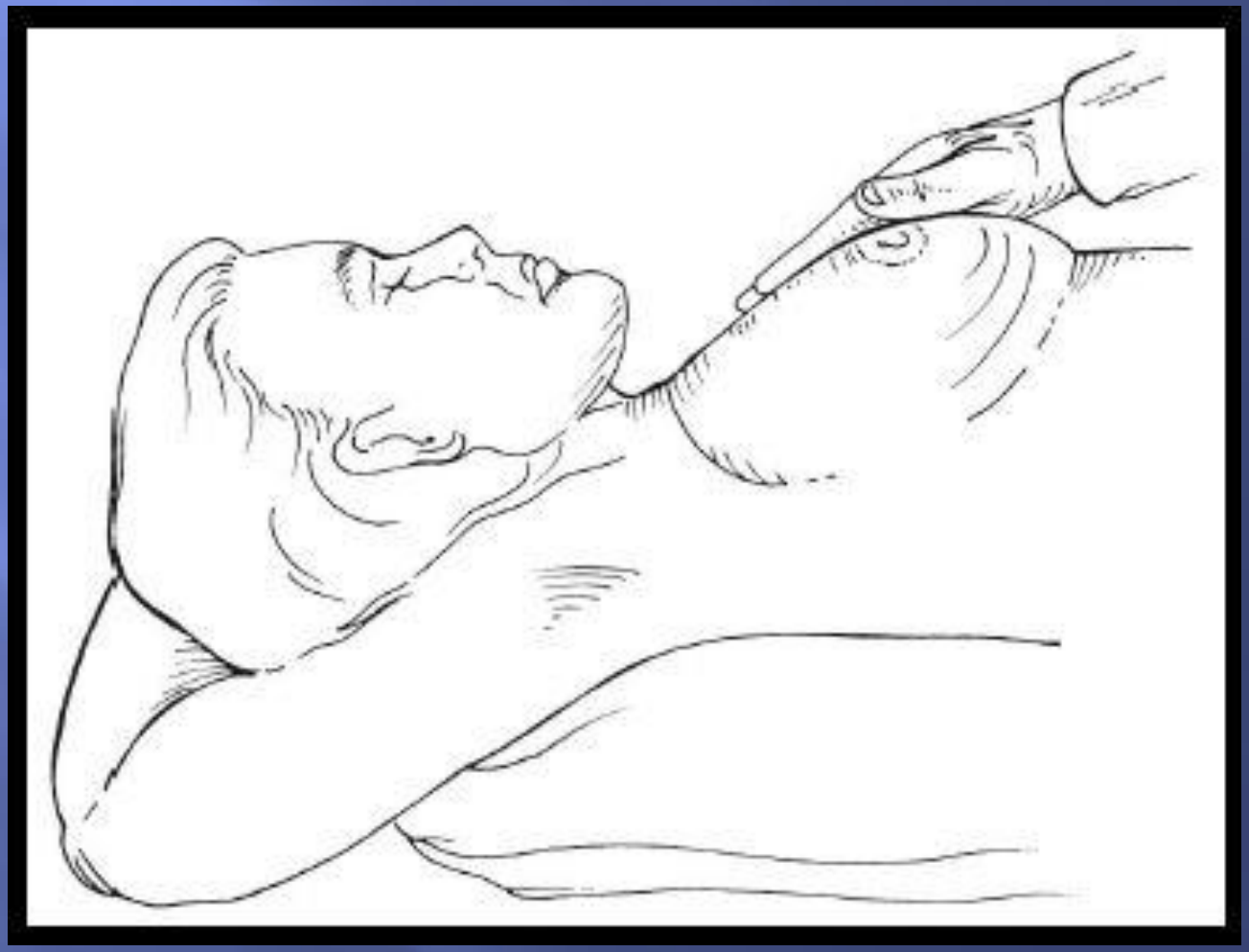
Skin Dimpling
Previous Breast Surgery

Inverted Nipple Since Puberty

Palpate Axilla and Clavicular Nodes



Breast Palpation



Common Benign Breast Disorders

Common Benign Breast Disorders

- Fibrocystic changes
- Fibroadenoma
- Intraductal papilloma
- Mammary duct ectasia
- Mastitis
- Fat necrosis
- Phylloides tumor
- Male gynecomastia

Fibrocystic Changes

- **Lumpy, bumpy breasts**
- **50-80% of all menstruating women**
- **Age 30-50**
  - 10% in women less than 21
- **Caused by hormonal changes prior to menses**
- **Relationship to breast cancer doubtful**

Fibrocystic Disease

- Histology
  - Adenosis
  - Apocrine metaplasia
  - Fibrosis
  - Duct ectasia
  - Mild duct ectasia

Signs and Symptoms

- Mobile cysts with well-defined margins
- Singular or multiple
- May be symmetrical
- Upper outer quadrant or lower breast border

Signs and Symptoms

- **Pain and tenderness**
- **Cysts may appear quickly and decrease in size**
- **Lasts half of a menstrual cycle**
- **Subside after menopause**
  -If no HRT

Breast Mass

- Breast Cysts
  - Fluid-filled
  - 1 out of every 14 women
    - 50% multiple and recurrent
  - Hormonally influenced
  - Needle aspirated

Breast Mass


Breast Diagnostic Center
P60 NP 739L
GE
LT BREAST
CN0
4cm
DR66
G 60
BREAST CYST
MI=0.6

Treatment

- Aspirate cyst fluid
- Imaging for questionable cysts
- Treatment based on symptoms
- Reassure
- "Atypical Hyperplasia" on pathology report indicates increased risk of breast cancer

Breast Pain

- Cyclical pain – hormonal
  - Dull, diffuse and bilateral
  - Luteal phase
  - Treatment: Reassurance, NSAIDS, evening primrose oil
- Non-cyclical pain
  - Non-breast vs breast
  - Imaging
  - Treatment: Reassurance, NSAIDS, evening primrose oil

Fibroadenoma

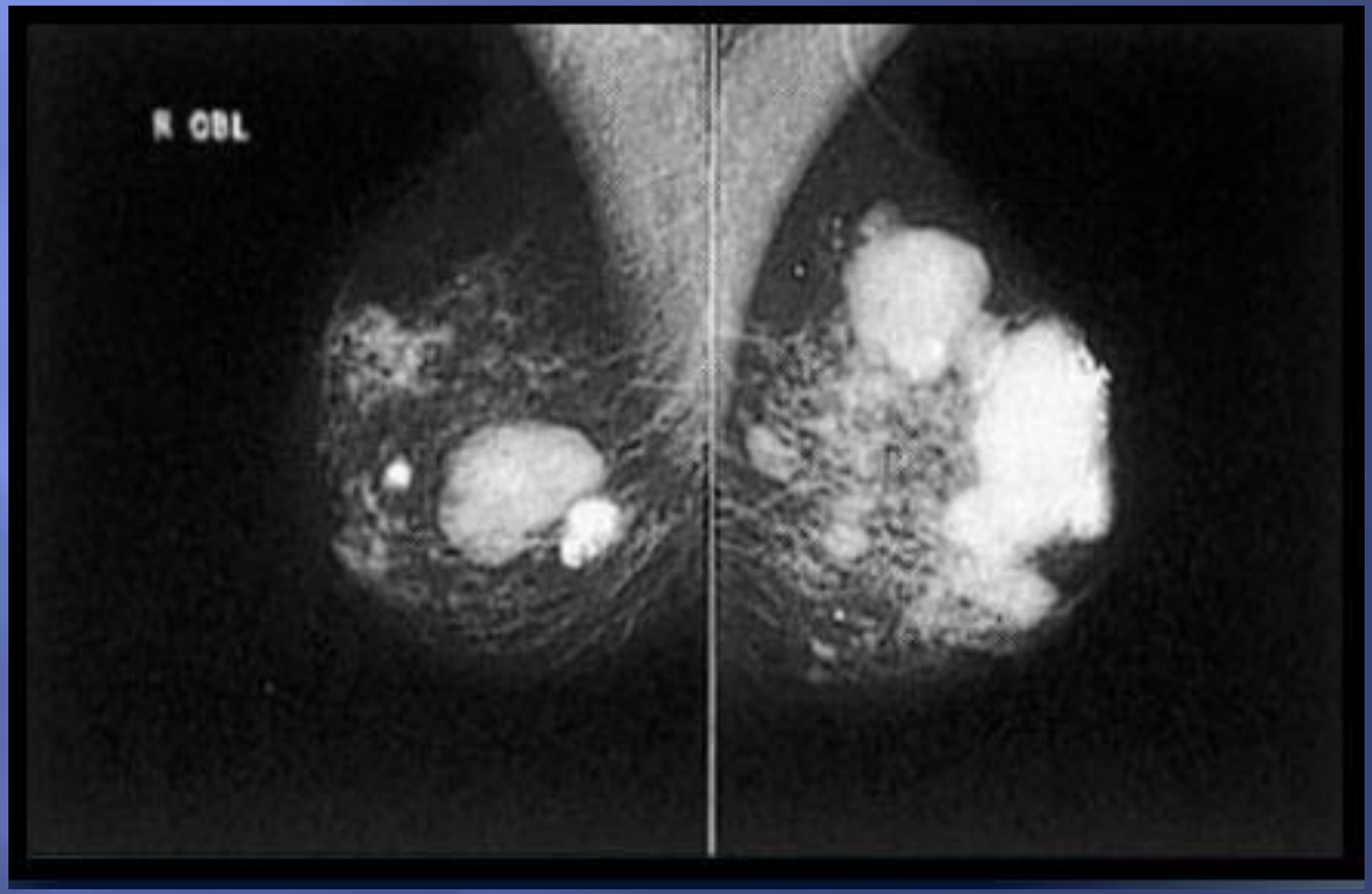
- Second most common breast condition
- Most common in black women
- Late teens to early adulthood
- Rare after menopause

Fibroadenoma

Signs and Symptoms

- Firm, rubbery, round, mobile mass
- Painless, non-tender
- Solitary
  - 15-20% are multiple
- Well circumscribed
- Upper-outer quadrant
- 1-5 cm or larger

Mammogram
Multiple Calcified Fibroadenomas



Intraductal Papilloma

- Slow-growing
- Overgrowth of ductal epithelial tissue
- Usually not palpable
- Cauliflower-like lesion
- Length of involved duct
- Most common of bloody nipple discharge
- 40-50 years of age

Signs and Symptoms

- Watery, serous, serosanguinous, or bloody discharge
- Spontaneous discharge
- Usually unilateral
- Often from single duct
  - Pressure elicits discharge from single duct
- 50% no mass palpated

Bloody Breast Discharge

Treatment

- Test for occult blood
- Ductogram
- Biopsy
- Excision of involved duct

Intraductal Papilloma

Galactorrhea

Mammary Duct Ectasia

- **Inflammation and dilation of sub-areolar ducts behind nipples**
- **May result in palpable mass because of ductal rupture**
- **Greatest incidence after menopause**
- **Etiology Unclear**
  - Ducts become distended with cellular debris causing obstruction

Mammary Duct Ectasia versus Breast Cancer

- **Left breast** – slit-like nipple characteristic of mammary duct eclasia
- **Right breast** – nipple retraction from carcinoma

Signs and symptoms

- **Multi-colored discharge**
  - Thick, pasty (like toothpaste)
  - White, green, greenish-brown or serosanguinous
- **Intermittent, no pattern**
- **Bilaterally from multiple ducts**
- **Nipple itching**
- **Drawing or pulling (burning) sensation**

Dried Secretions from Mammary Duct Ectasia

Yellow Breast Discharge Duct Ectasia

Multi-colored Breast Discharge

Treatment

- Test for occult blood
- Imaging
  - Mammogram
  - Sonogram
- Biopsy
  - Excision of ducts if mass present
- Antibiotics
- Close follow-up

Mastitis

- Breast infection when bacteria enter the breast via the nipple
- Ducts infected
- Fluid stagnates in lobules
- Usually during lactation
- Penicillin resistant staphylococcus common cause

Mastitis

- Treatment
  - Antibiotics
  - Continue breast feeding
  - Close follow-up

Puerperal Mastitis

Puerperal Mastitis
Left Breast

Inflammatory Carcinoma

Erythema and peau d'orange

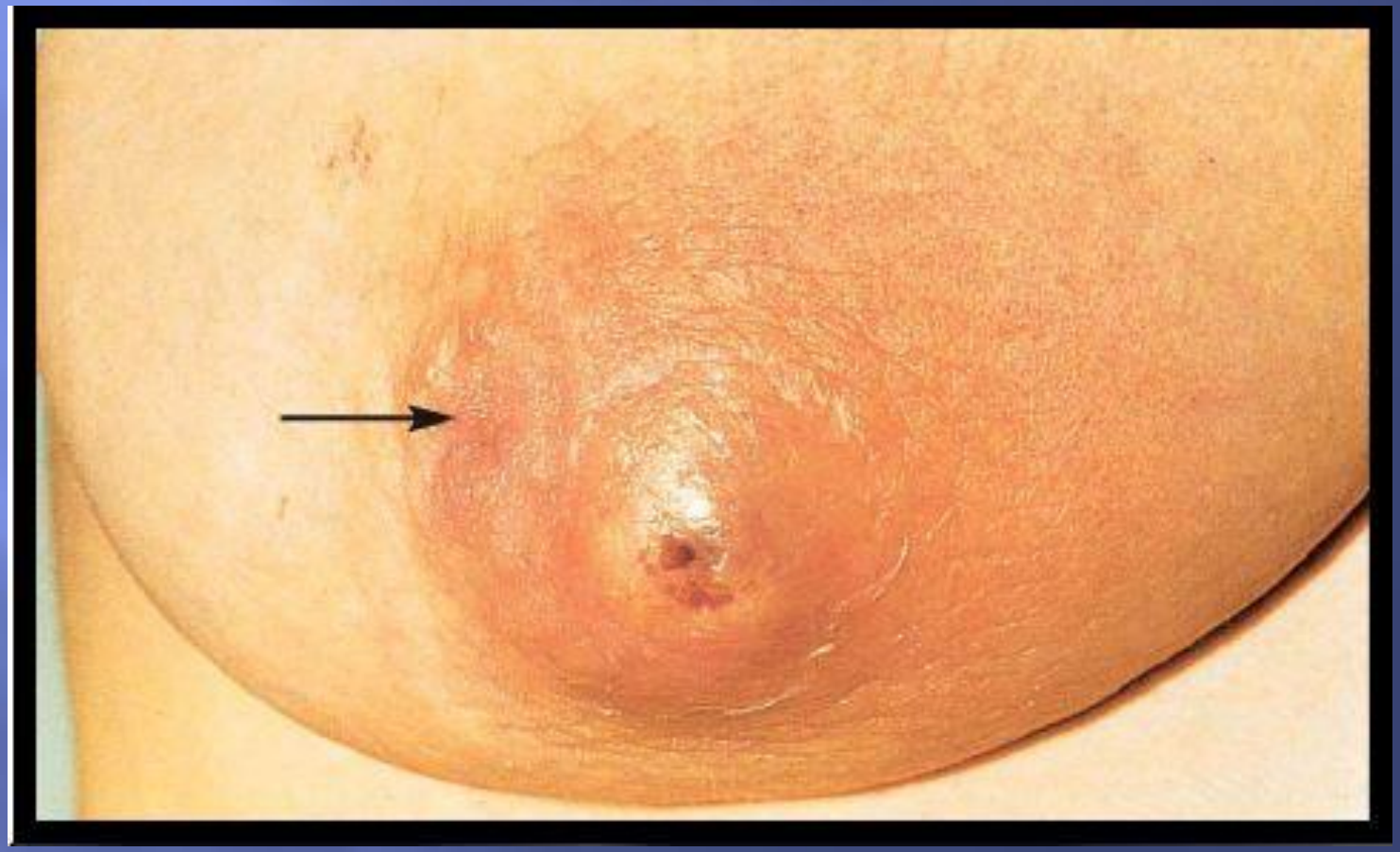
Signs and Symptoms of Mastitis

- Pain
- Nipple discharge
  - Pus
  - Serum
  - Blood
- Localized induration
- Fever

Breast Abscess

Breast Abscess

Non-Lactating Breast Abscess



Arrow points to inverted nipple

Breast Abscess

- Treatment
  - Antibiotics
  - Needle aspiration
  - Incision and drainage

Draining Breast Abscess

Abscess Drained under Local Anesthesia

Puerperal Breast Abscess

Before treatment | Local anesthetic | After treatment

Abscess occurred during lactation

Peripheral Breast Abscess

- Left – before management
- Right – after recurrent aspiration and antibiotics

Fat Necrosis

- **Cause**
  - Trauma to breast
  - Surgery
- **Necrosis of adipose tissue**
- **Pain or mass**
  - Usually non-mobile mass
  - Resolves over time without treatment
    -may be excised

Fat Necrosis

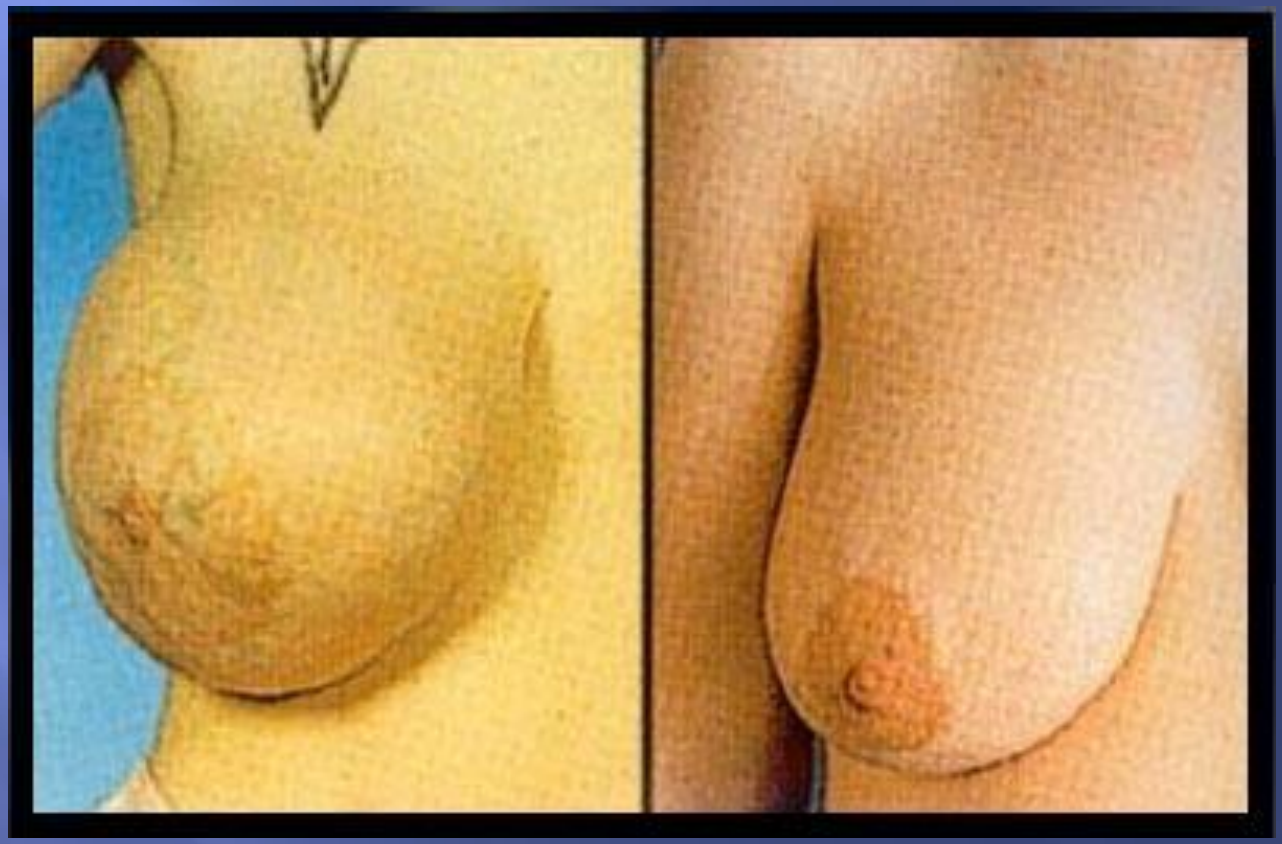
Seat Belt Trauma

Breast Hematoma

Phylloides Tumor

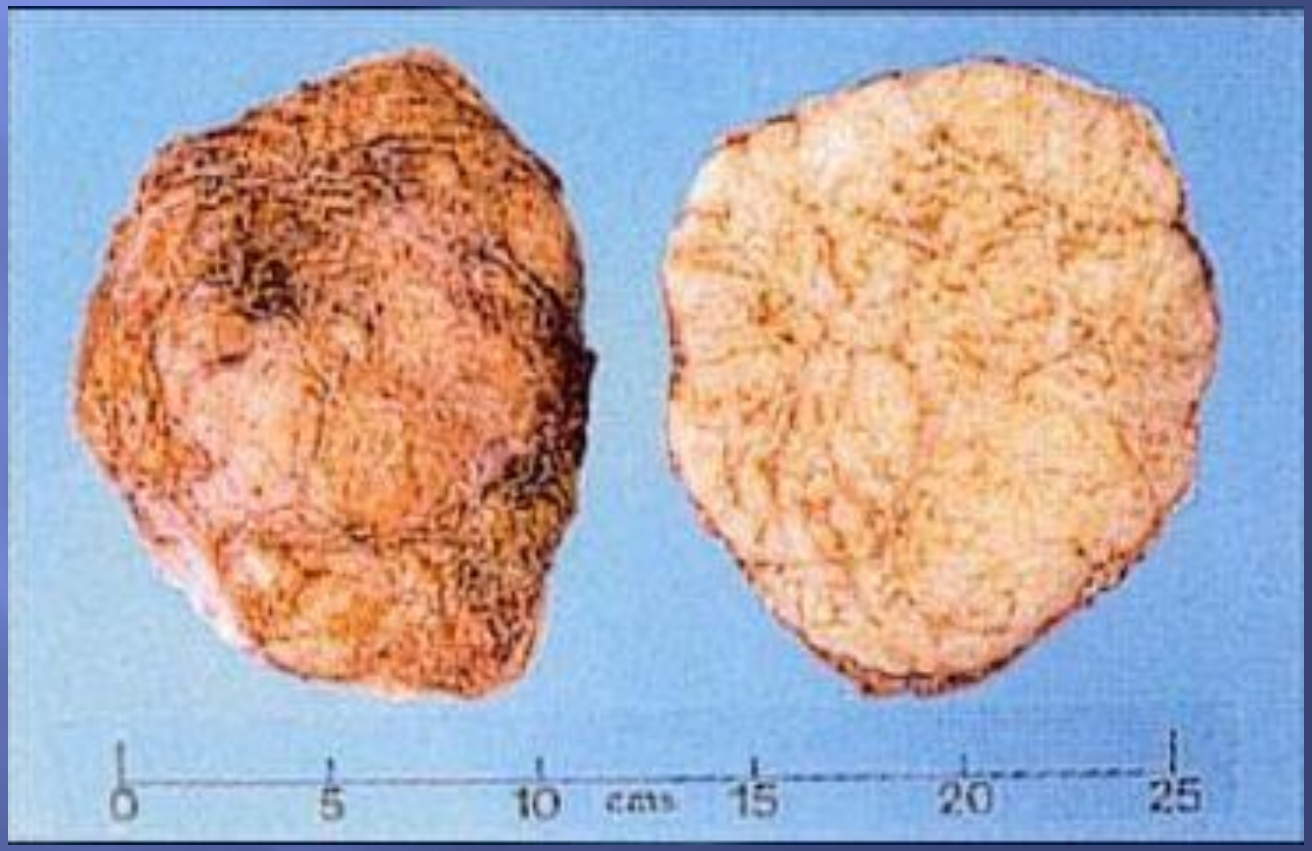
- **Giant fibroadenoma with rapid growth**
- **Malignant potential**
- **Often occurs in women aged 40+**
- **Treatment**
  - Excision

Giant Fibroadenoma

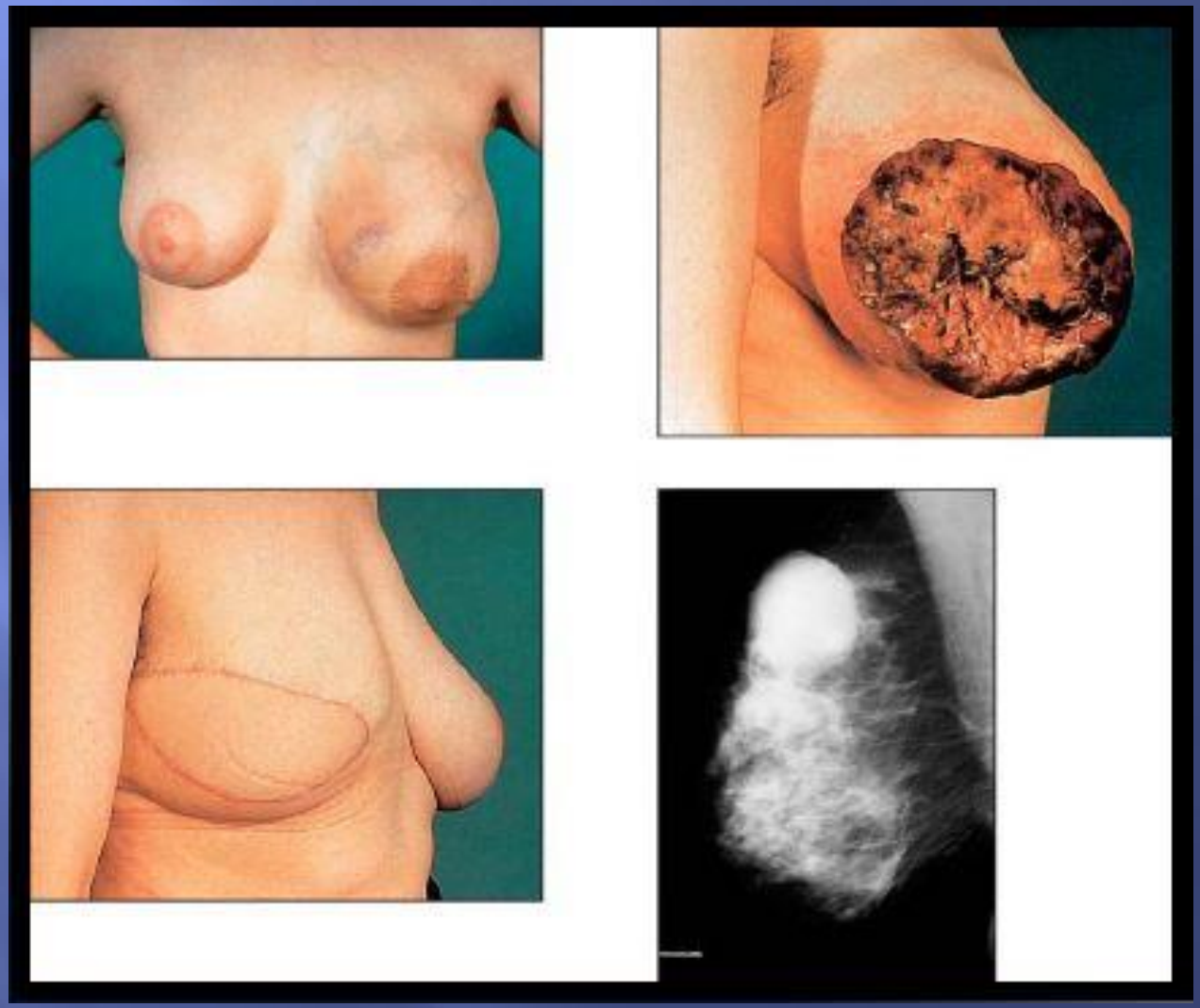


Before Surgery **After Surgery**

Cross Section of Giant Fibroadenoma



Malignant Phylloides Tumor



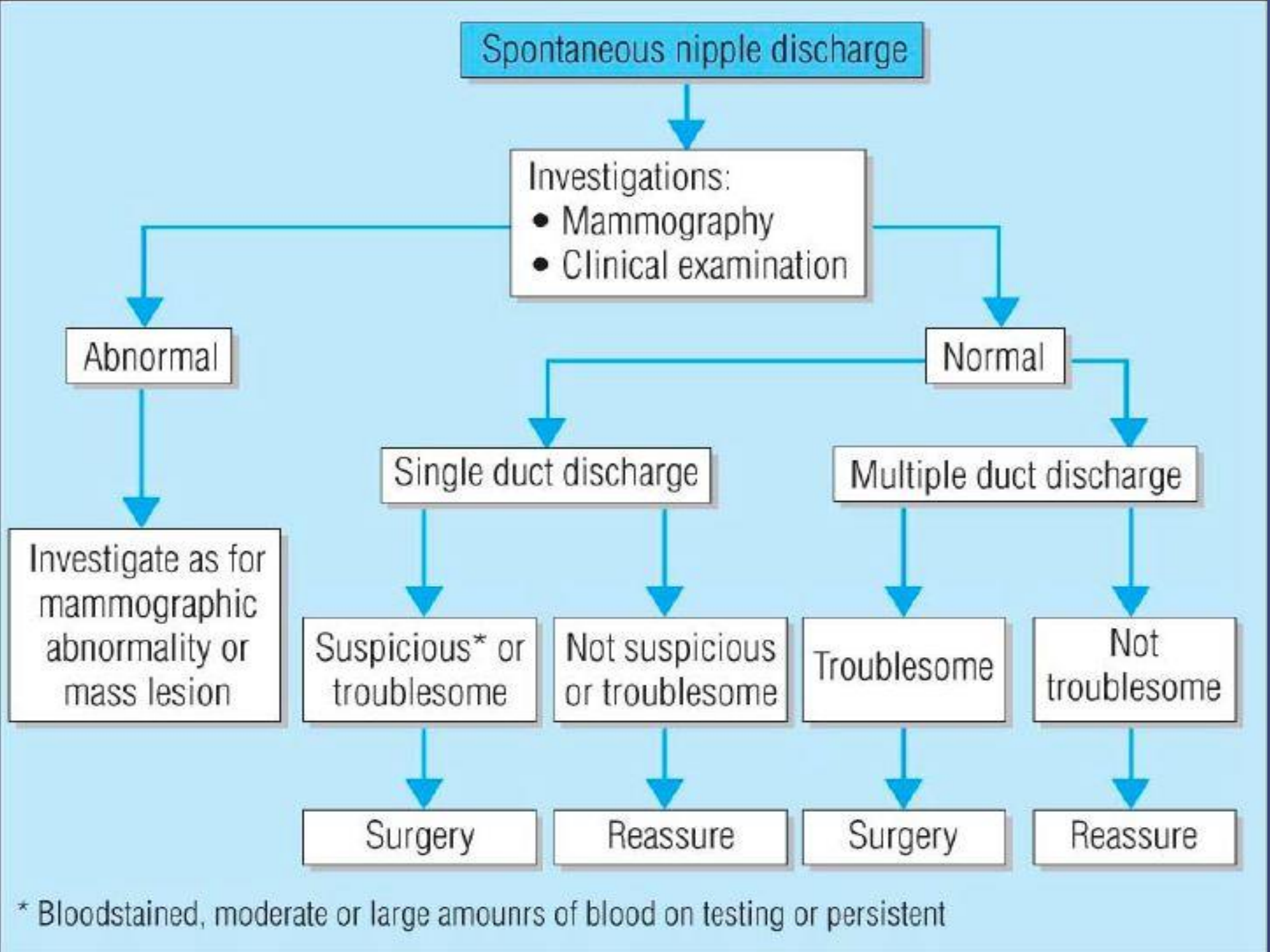
Left-Sided Gynecomastia

Treatment

- **If pre-puberty**
  - Wait to see if it resolves
- **Change medication**
- **Treat underlying illness**
- **Occurs in families with genetic mutation**
  - Colon, prostate cancer

Differential Diagnosis of Nipple Discharge

- **Common causes in non-pregnant women**
  - Carcinoma
  - Intraductal papilloma
  - Fibrocystic changes
  - Duct ectasia
  - Hypothyroid
  - Pituitary adenoma


Spontaneous nipple discharge
Investigations:
• Mammography
• Clinical examination
Abnormal
Normal
Investigate as for mammographic abnormality or mass lesion
Single duct discharge
Multiple duct discharge
Suspicious* or troublesome
Not suspicious or troublesome
Troublesome
Not troublesome
Surgery
Reassure
Surgery
Reassure
* Bloodstained, moderate or large amounrs of blood on testing or persistent

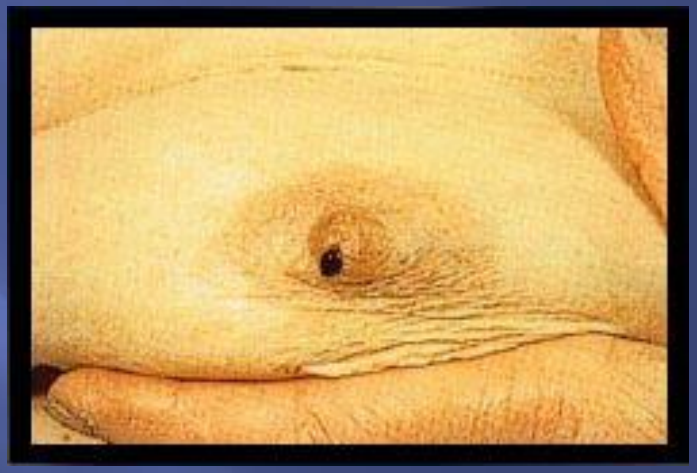
Clinical Characteristic

- **Physiologic**
  - Usually bilateral
  - Multiple ducts
  - Non-spontaneous
  - Screen for phenothiazine use and stimulation

Physiological Breast Discharge

Clinical Characteristic

- **Pathologic discharge**
  - Spontaneous
  - Unilateral
  - Single duct
  - Discolored discharge

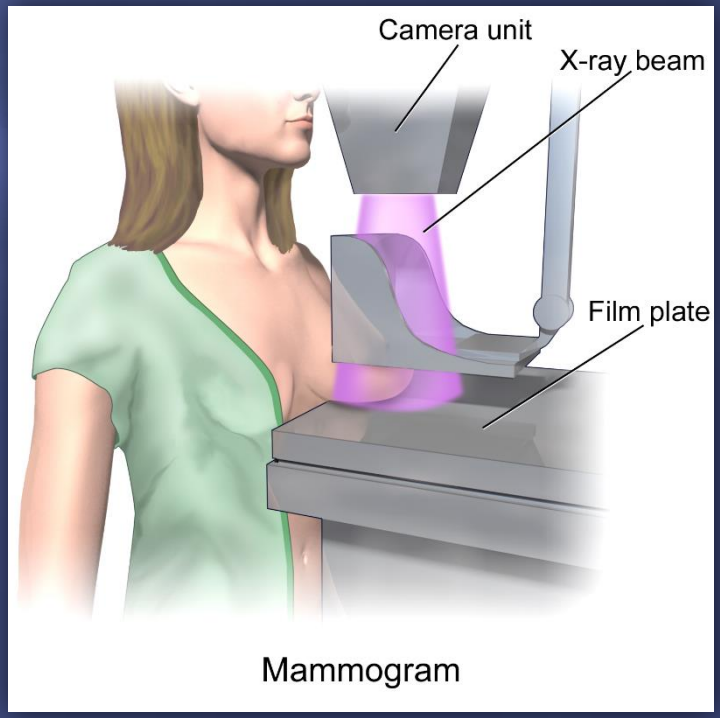


Bloody discharge

Bloody Nipple Discharge

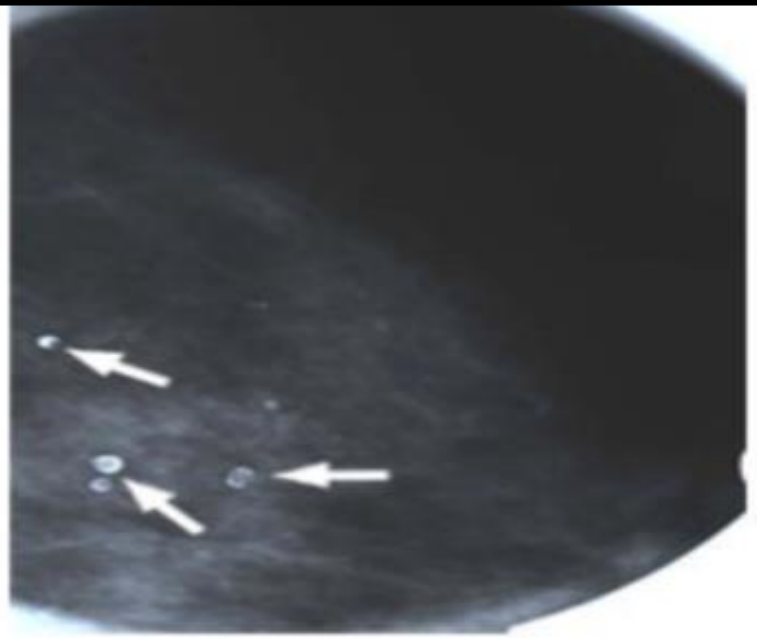
Mammography

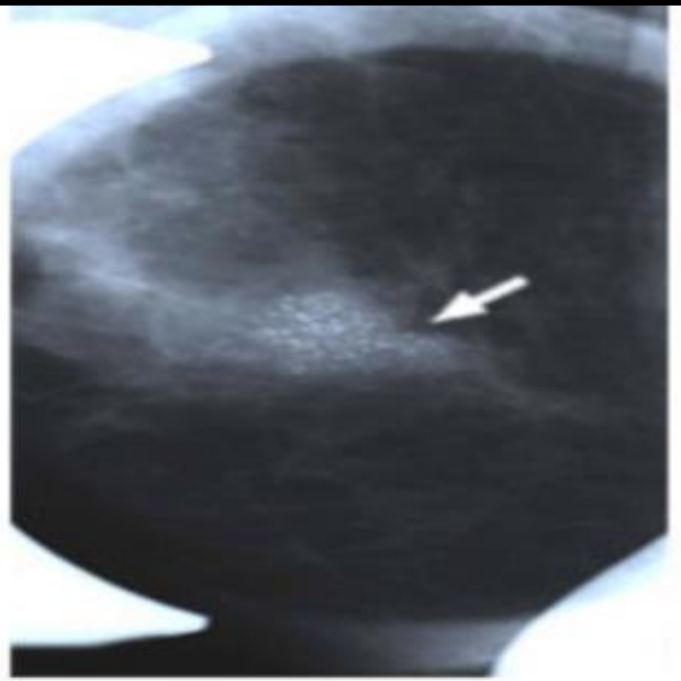
- **Screening tool**
  - Age of 40
- **Estimated reduction in mortality 15 – 25%**
- **10% false positive rate**
- **Densities and calcification**

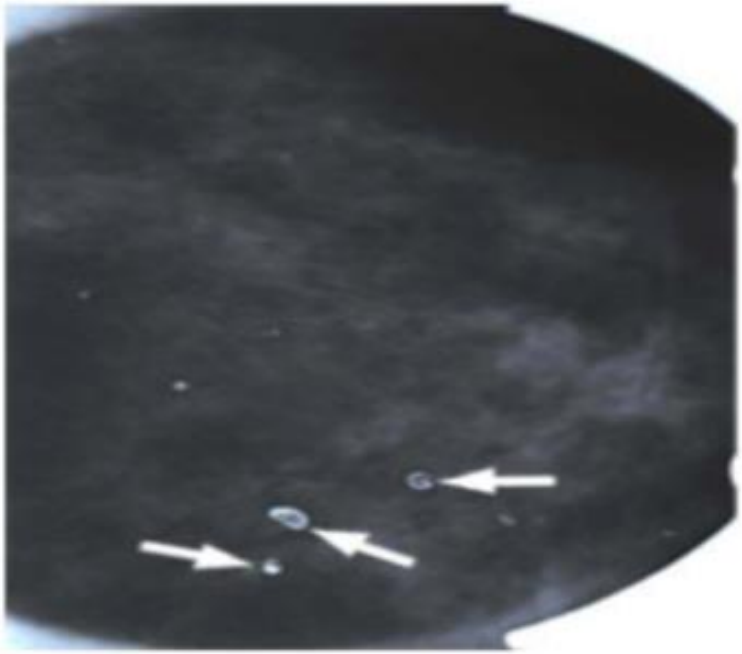


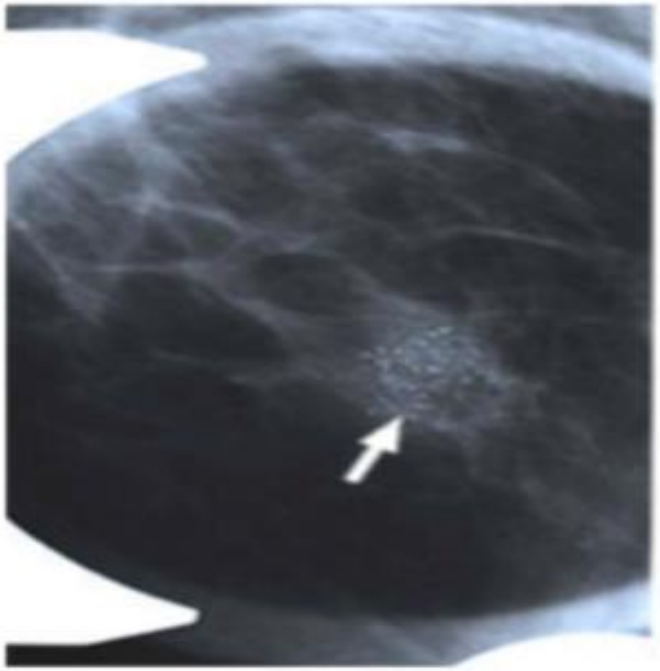
Calcification

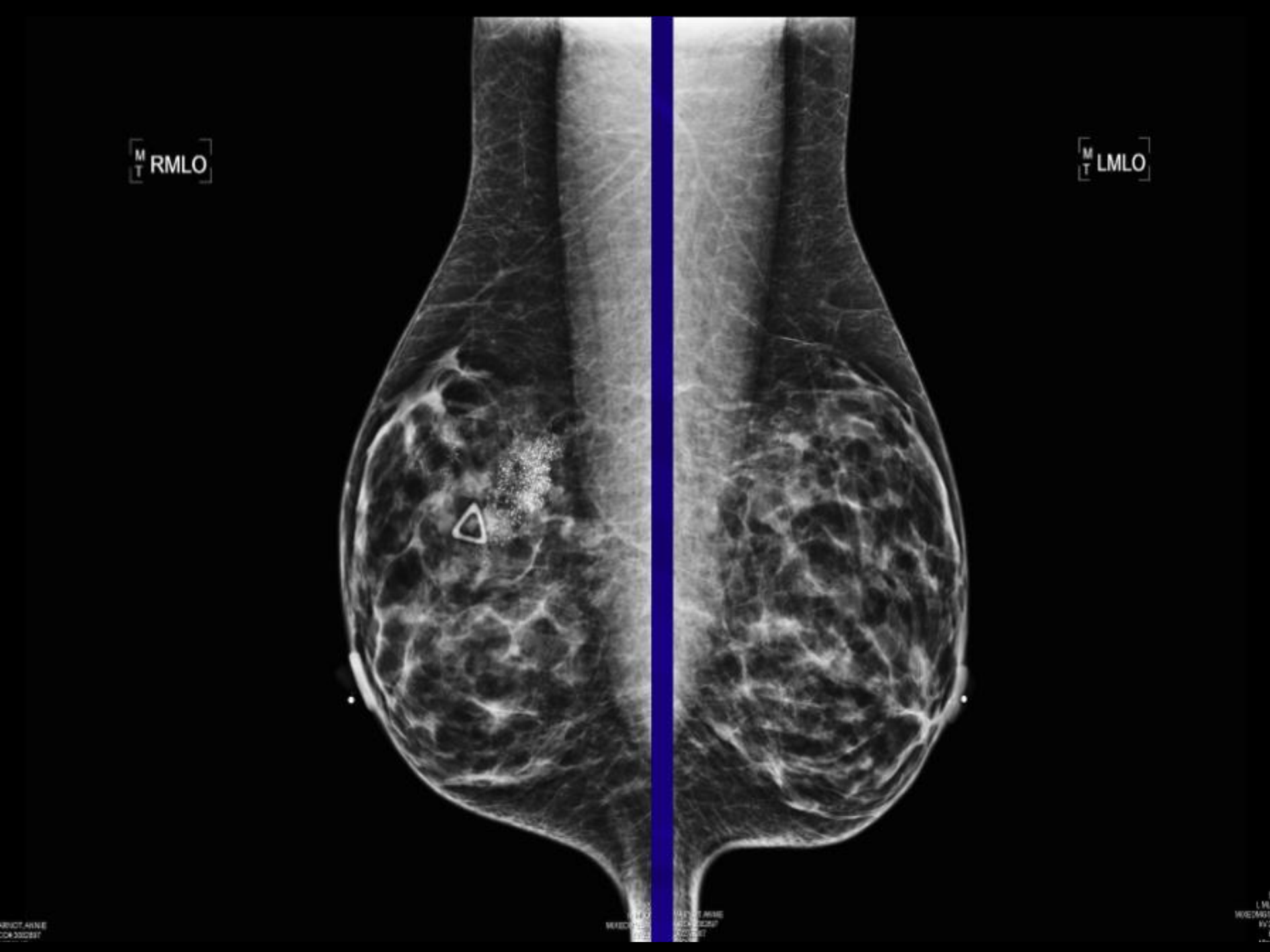
- **Macrocalcifications**
  - Large white dots
  - Almost always non-cancerous and require no further follow-up
- **Microcalcifications**
  - Very fine white specks
  - Usually non-cancerous but can sometimes be a sign of cancer
  - Size, shape and pattern







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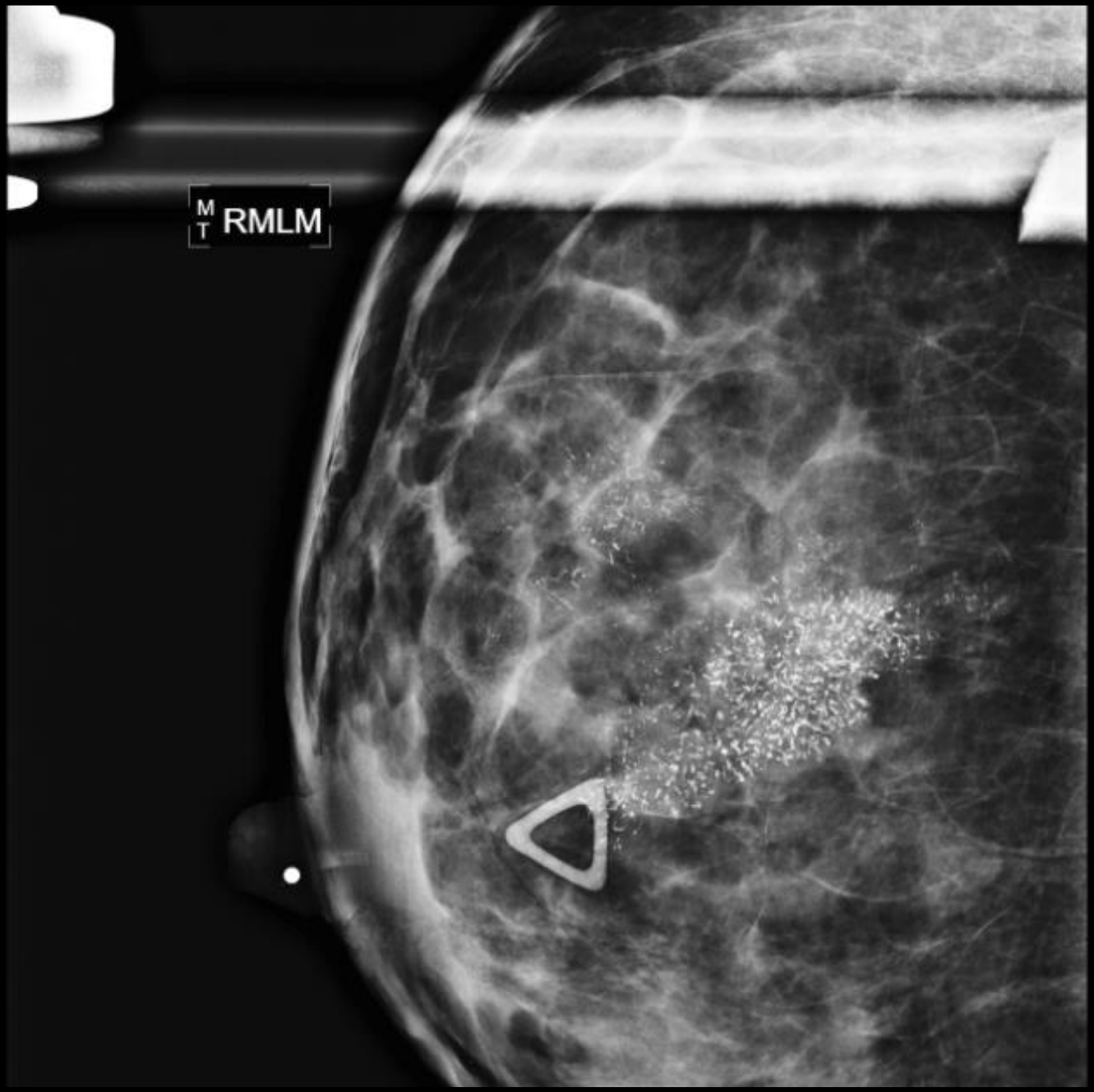
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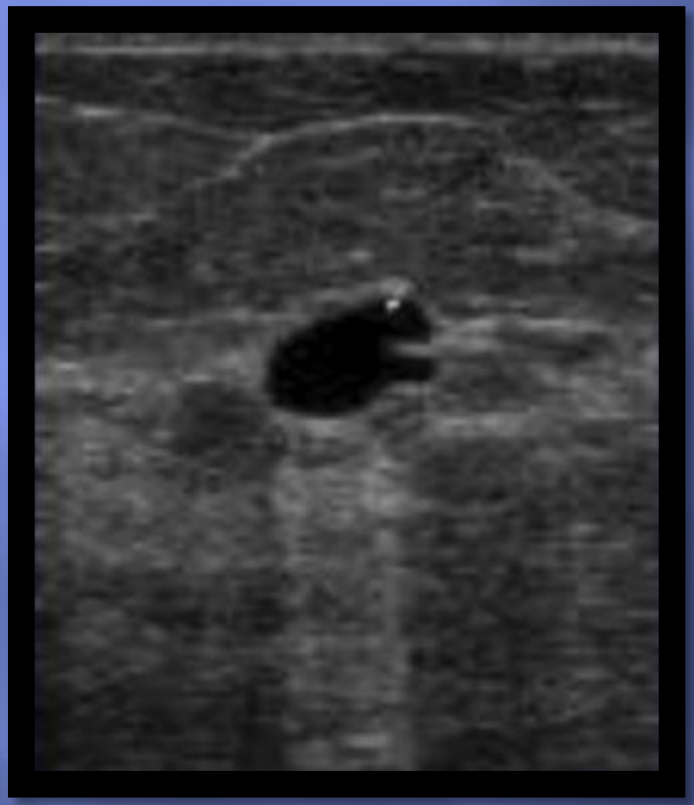
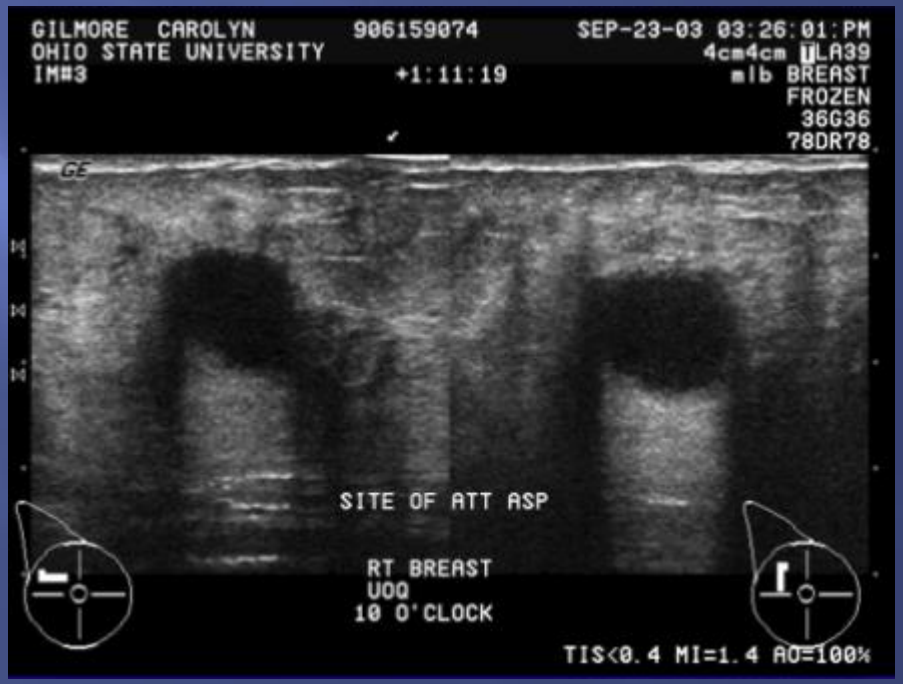
BI-RADS Classification	Features
0	Need additional imaging
1	Negative – routine in 1 year
2	Benign finding – routine in 1 year
3	Probably benign – 6 month follow-up
4	Suspicious abnormality – biopsy recommended
5	Highly suggestive of malignancy – appropriate action must be taken

Ultrasound

Benign	Malignant
Pure hyperechoic	Hypoechoic, spiculated
Elliptical shape (wider than tall)	Taller than wide
Lobulated	Duct extension
Complete tine capsule	Microlobulation

Ultrasound

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SEP-23-03 03:26:01:PM
4cm4cm ULA39
mlb BREAST
FROZEN
36G36
78DR78
GE
SITE OF ATT ASP
RT BREAST
UOQ
10 O'CLOCK
TIS<0.4 MI=1.4 AO=100%

MRI

- **High risk patients**
  - History of breast cancer
  - LCIS, atypia
  - 1st degree relative with breast cancer
  - Very dense breast

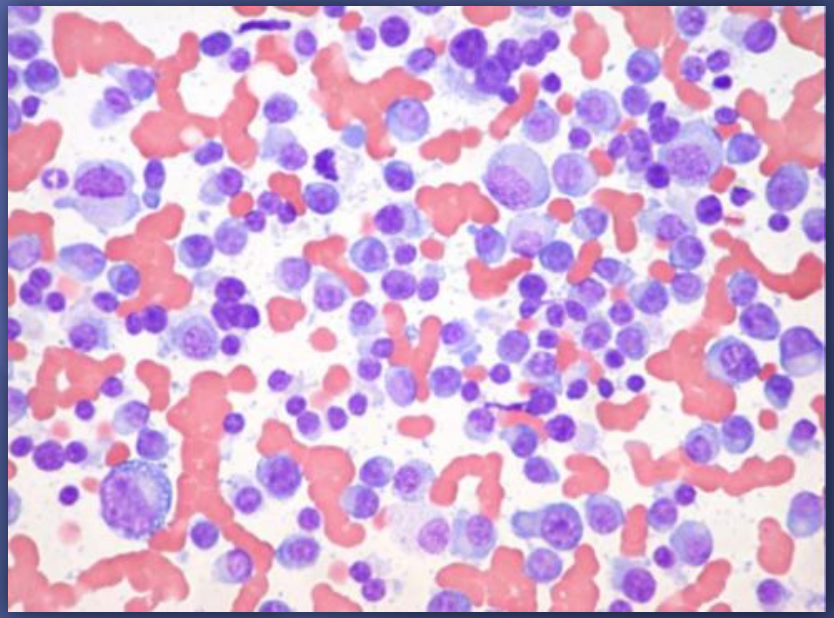
- **High sensitivity**
  - 10 – 20% will have a biopsy

Diagnosis

- **Fine needle aspiration**
  - Cytology
- **Core biopsy**
  - Image guided
  - Stereotactic
- **Excisional biopsy**
  - Needle localization

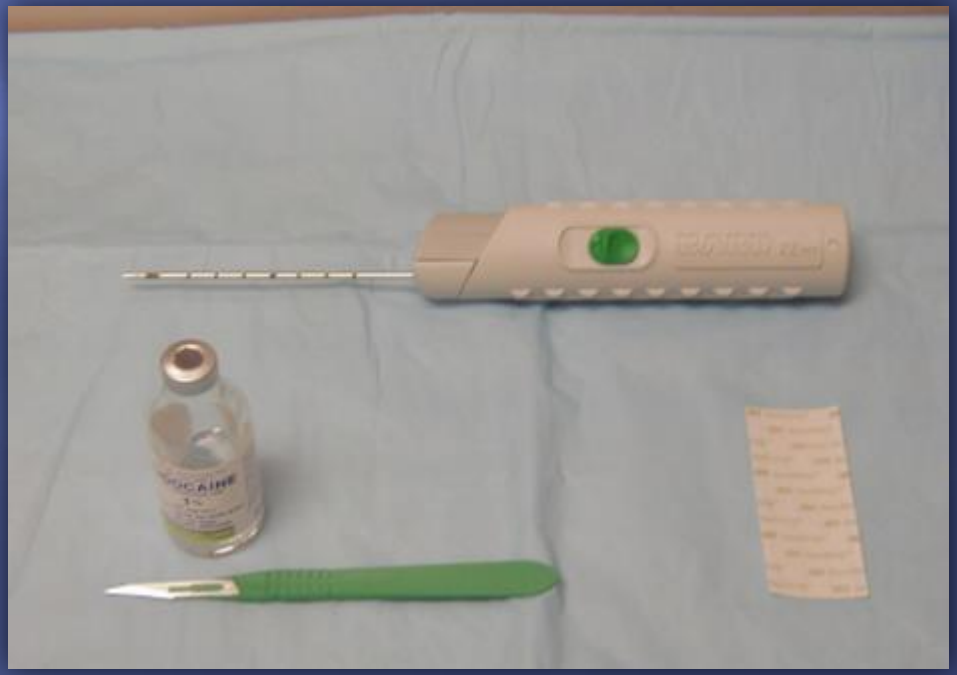
Fine Needle Aspiration

- Fast, inexpensive
- 96% accuracy
- Institution dependent
- Unable to differentiate between in-situ vs CA



Core Needle Biopsy

- 14 – 18 gauge spring loaded needle
- Tissue
- Multiple

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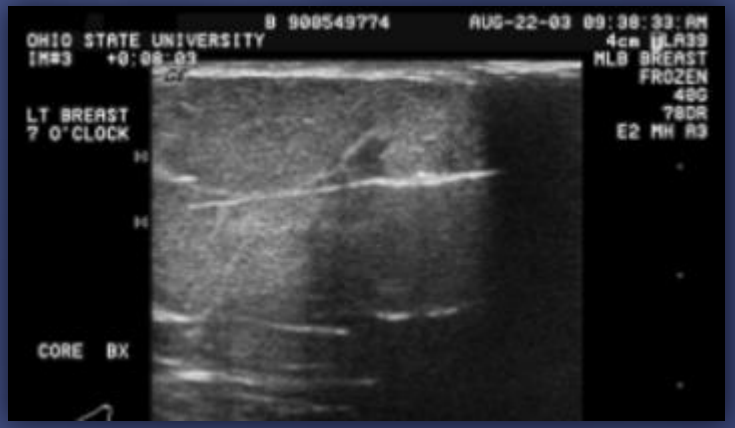
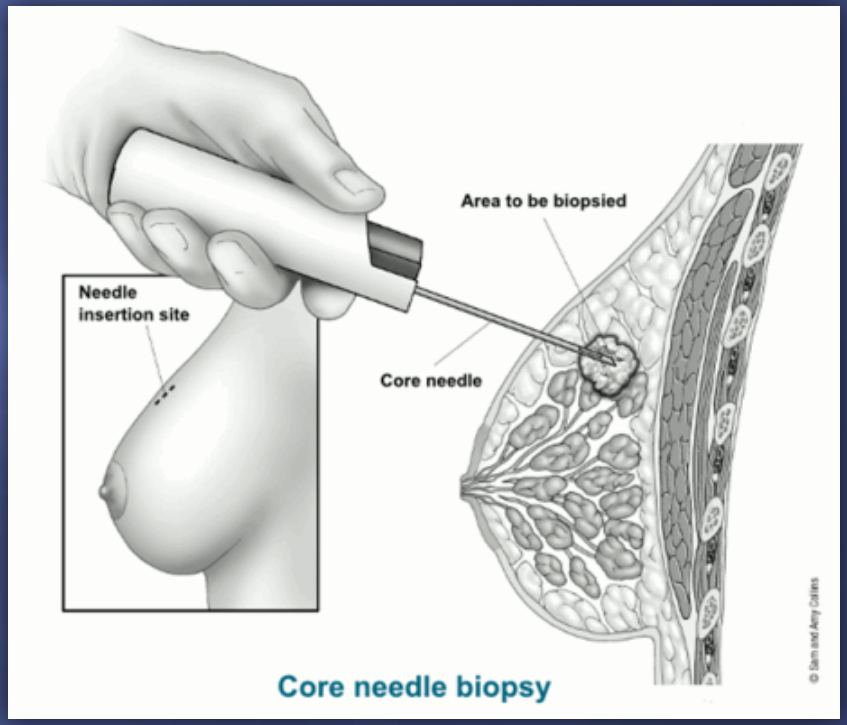
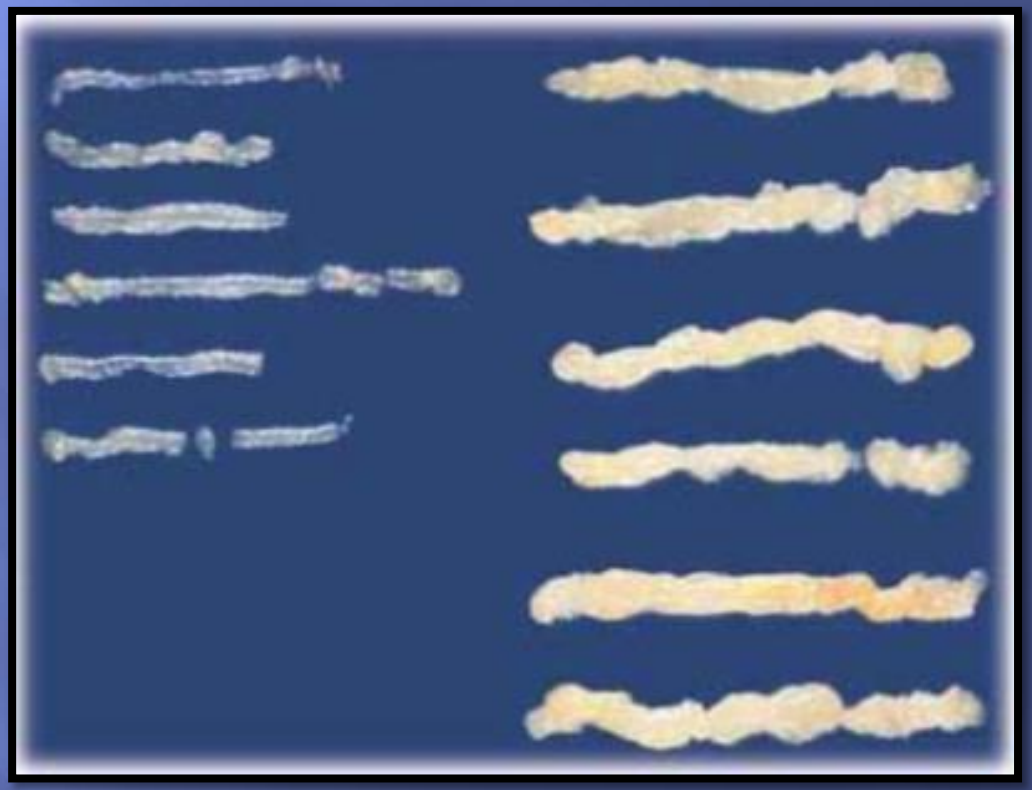
AUG-22-03 09:30:20 AM
OHIO STATE UNIVERSITY
4cm VLA39
MLB BREAST
FROZEN
38G
78DR
E2 MH A3
LT BREAST
7 O'CLOCK
CORE BX


B 900549774
AUG-22-03 09:38:33 AM
OHIO STATE UNIVERSITY
4cm VLA39
MLB BREAST
FROZEN
48G
78DR
E2 MH A3
LT BREAST
7 O'CLOCK
CORE BX

Large Core Biopsy

- 6 – 14 gauge core
- Large Samples
- Single insertion





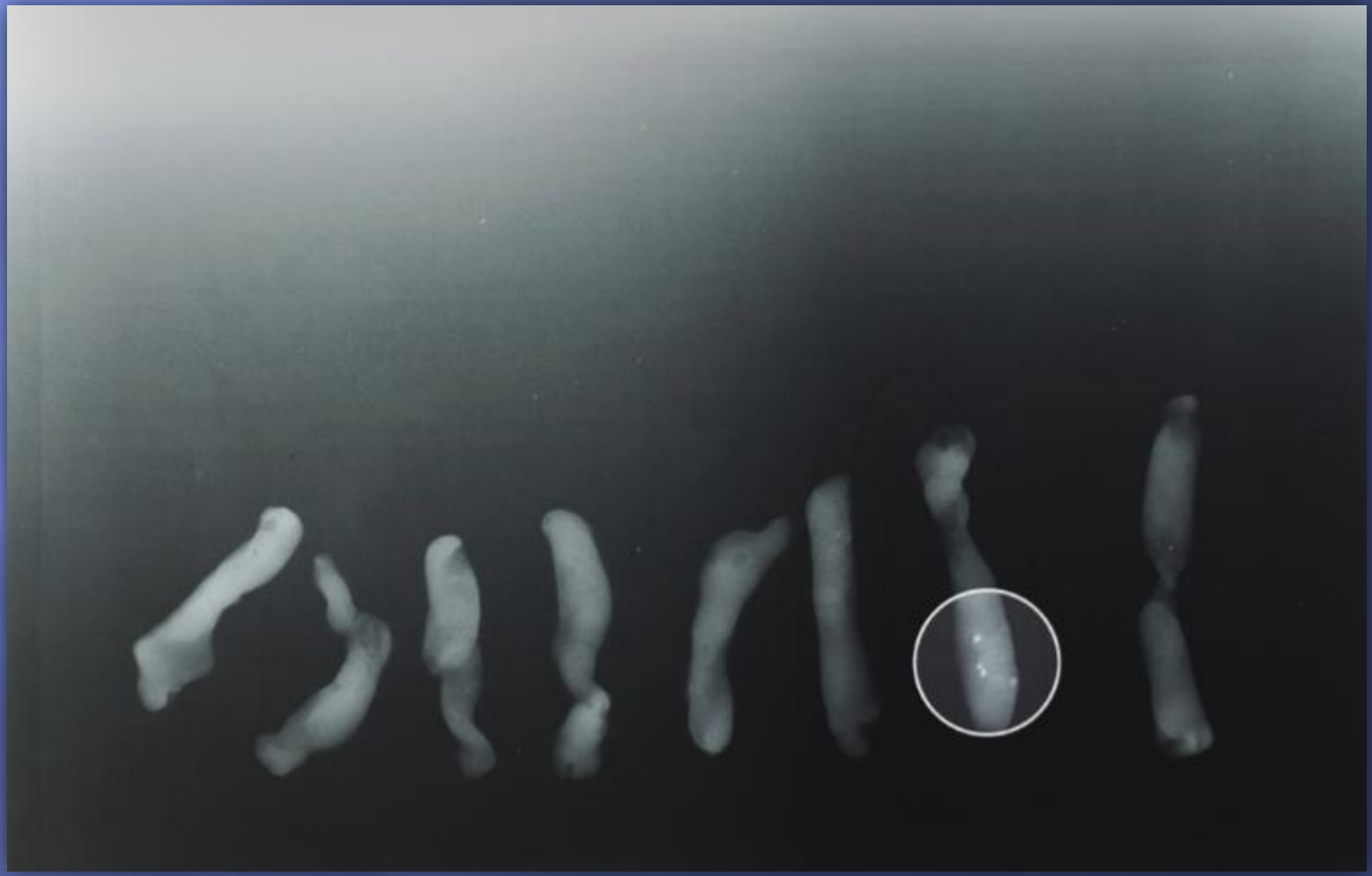
Core Biopsy

Vacuum Assisted

Stereotactic Biopsy

- Suspicious mammographic abnormalities
- Patients lay prone

Mamm
ETHICON ENDO



Excisional Biopsy

- Atypical lesions
- LCIS
- Radial scar
- Atypical papillary lesions
- Radiologic-pathologic discordance
- Phyllodes
- Inadequate tissue harvesting

Screening

- **Prior breast cancer or atypia**
  - Annual mammography
  - 6 month CBE
- **Family Hx**
  - 10 years younger than relative's diagnosis
  - 6 month CBE
- **BRCA**
  - 25 y.o, annual mammography
  - 6 month CBE

Genetics

- **Early age of onset**
- **2 breast primaries or breast & ovarian CA**
- **Clustering of breast CA with:**
  - Male breast CA
  - Thyroid CA
  - Sarcoma
  - Adrenocortical CA
  - Pancreatic CA
  - Leukemia/Lymphoma on same side of family
- **Family member with BRCA gene**
- **Male breast CA**
- **Ovarian CA**

BRCA

- Account for 25% of early-onset breast cancers
- 36 - 85% lifetime risk of breast cancer
- 16 – 60% lifetime risk of ovarian cancer

BRCA Management

- Monthly BSE – 18 y.o
- 6 month CBE & annual mammo – 25 y.o
- Discuss risk reducing options
  - Prophylactic Mastectomies
  - Salpingo-oophorectomy upon completion of child bearing
- 6 month transvaginal US & CA125 – 35. y.o

Any Questions?