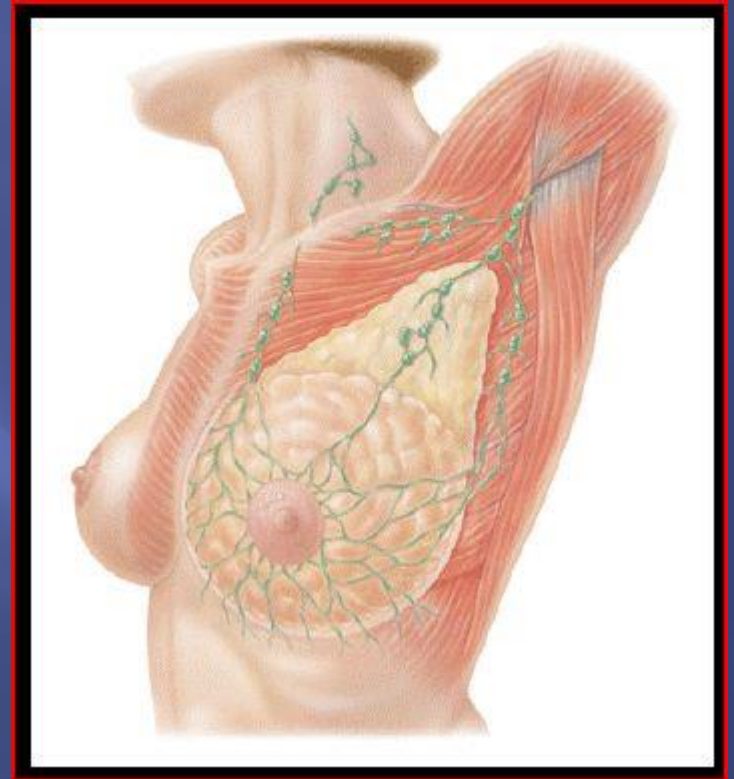


BREAST DISEASE

Dr.Amal Al-Abdulkareem

Breast Modified Sebaceous Glands

- ❖ **Upper border**
 - Clavicle
- ❖ **Lower border.**
 - 6th or 7th rib.
- ❖ **Inner Border**
 - Edge of sternum.
- ❖ **Outer border**
 - Mid-axillary line.



External Anatomy of the Breast

❖ Nipple

- Pigmented, Cylindrical
- 4th inter-costal space
- * at age 18

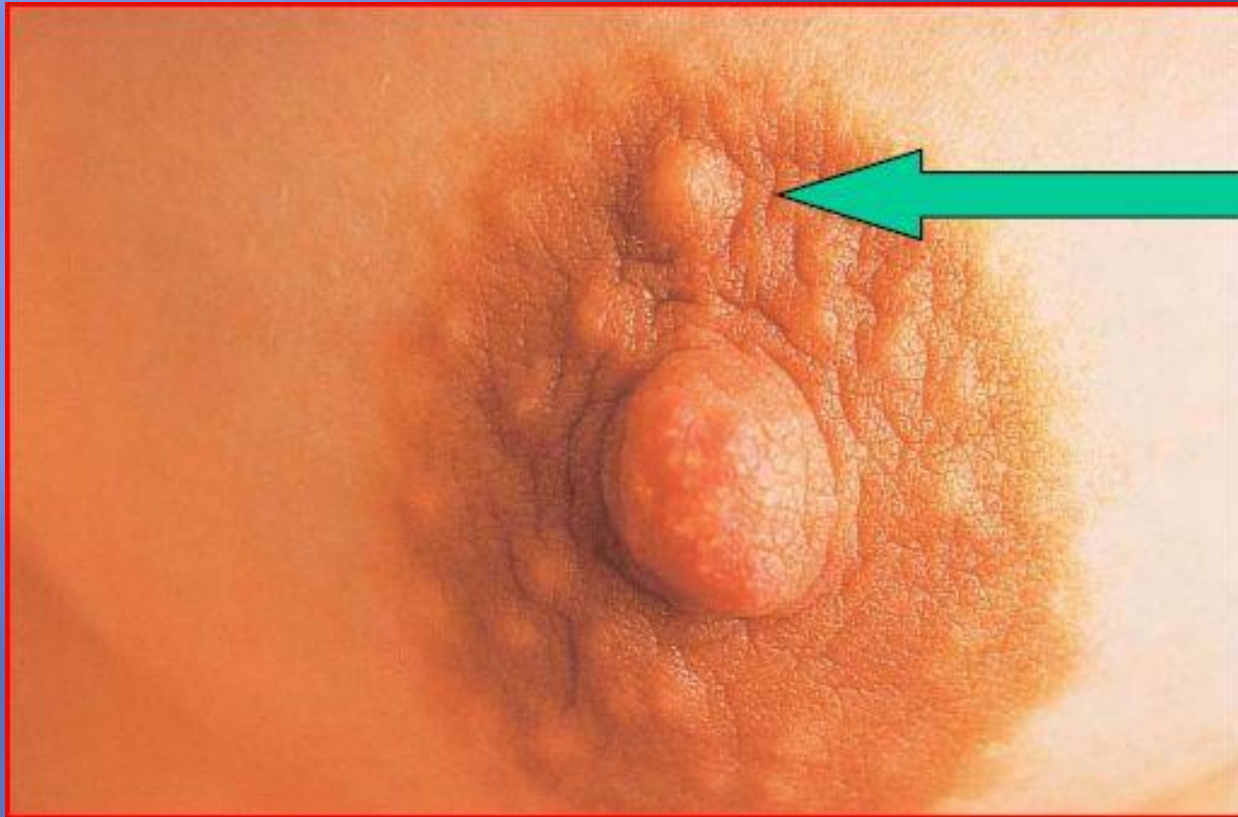
❖ Areola

- Pigmented area surrounding nipple

❖ Glands of Montgomery

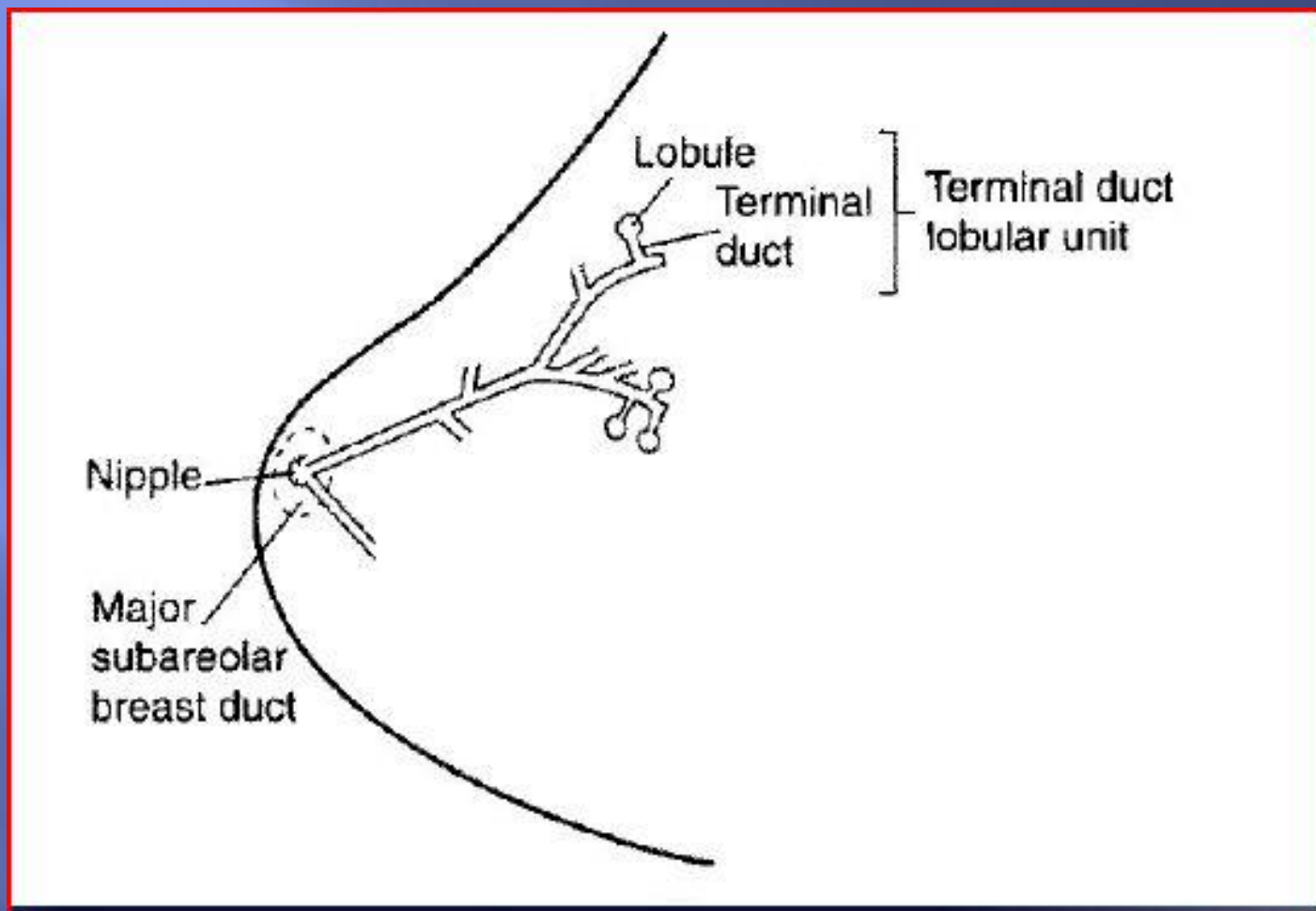
- Sebaceous glands within the areola
- Lubricate nipple during lactation

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

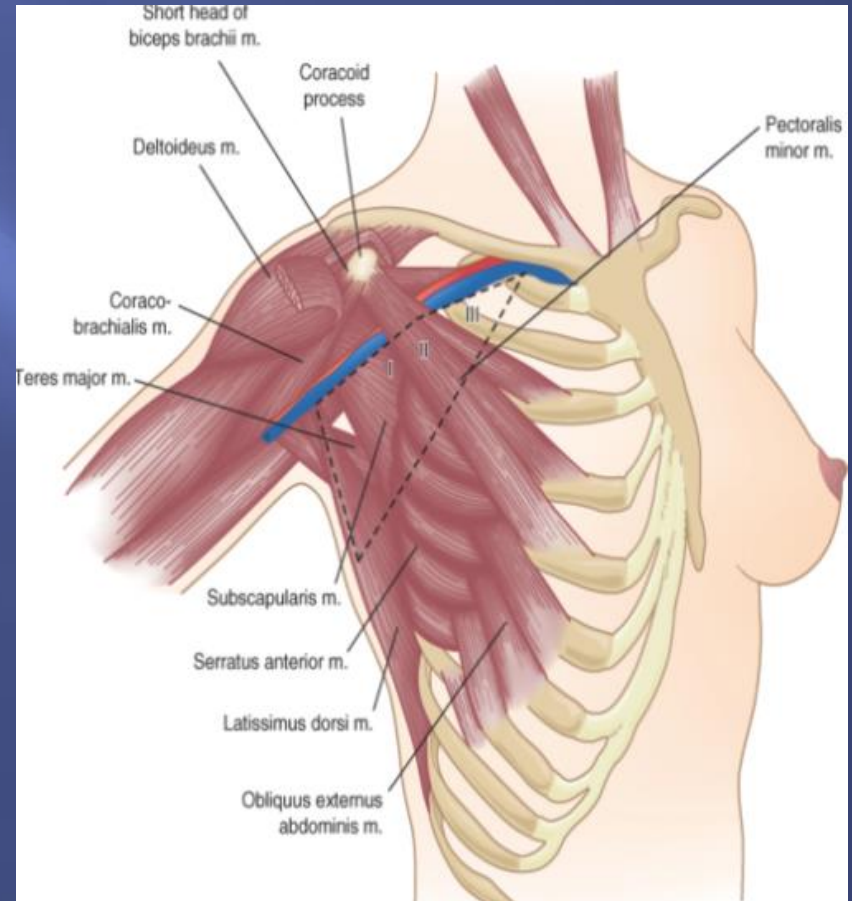
- Serratus anterior

Thoracodorsal Nerve

- Latissimus Dorsi

Intercostalbrachial Nerve

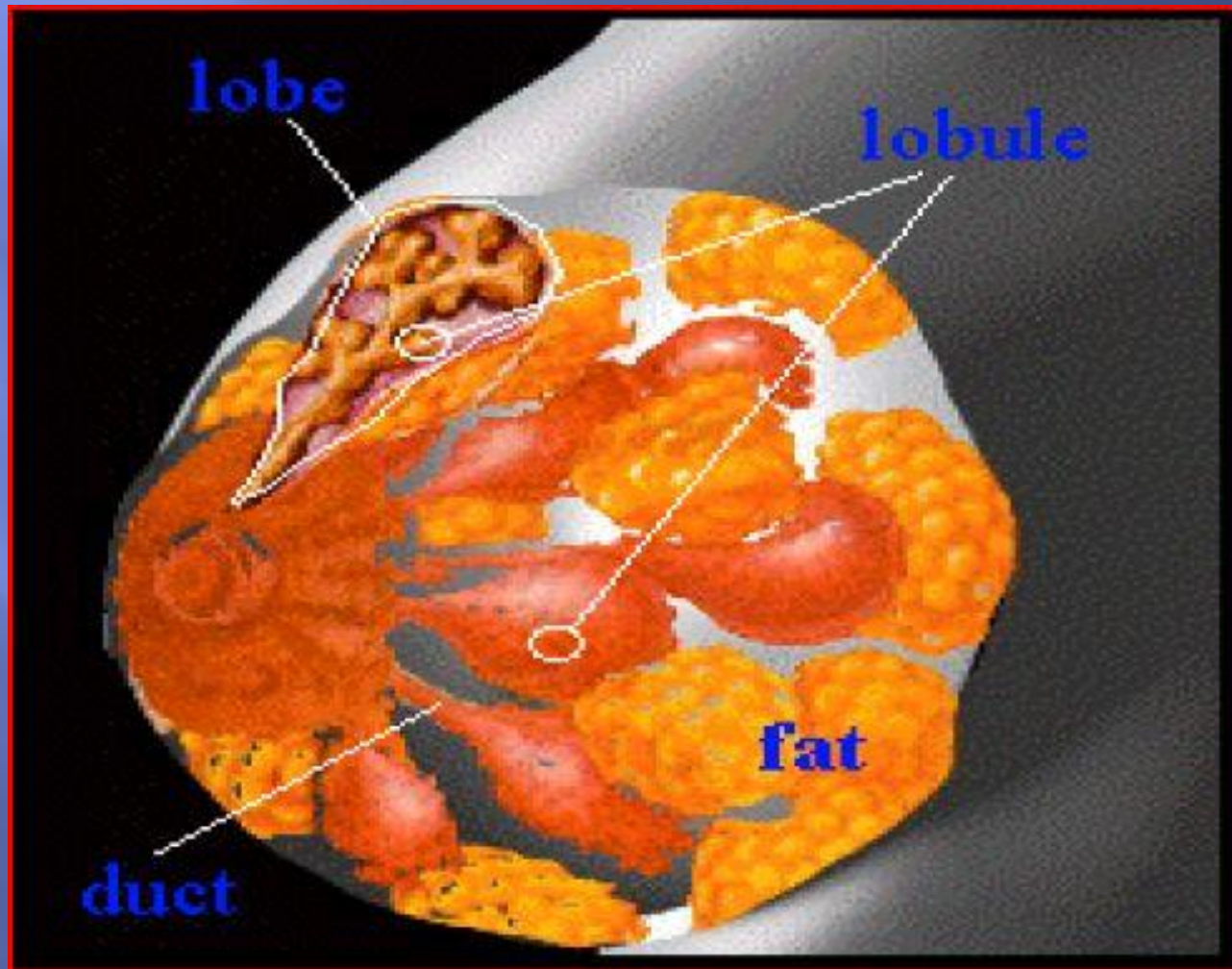
- Lateral cutaneous
- Sensory to medial arm & axilla



Tissue Types

- ❖ **Glandular Tissue**
 - Milk producing tissue
- ❖ **Fibrous. connective 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

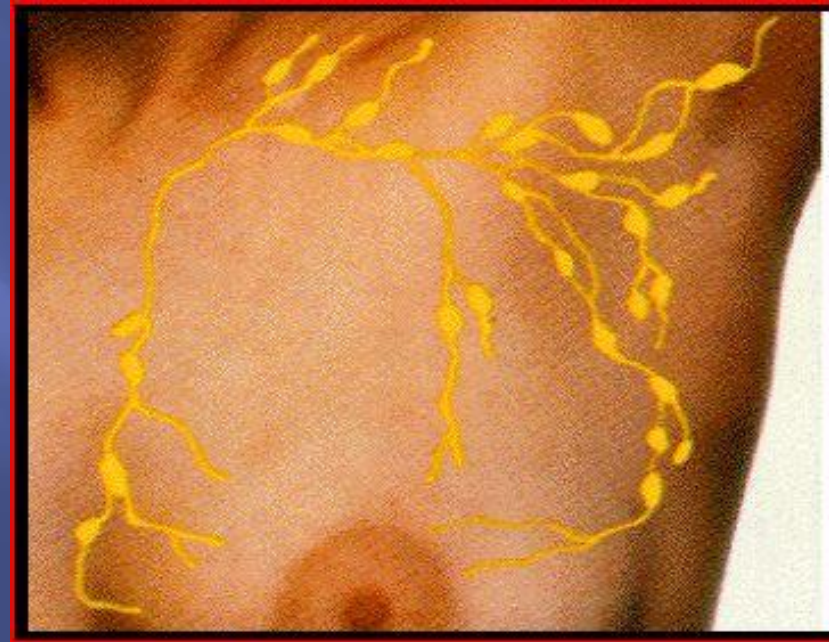
- Skin retraction or dimpling

Fatty Tissue

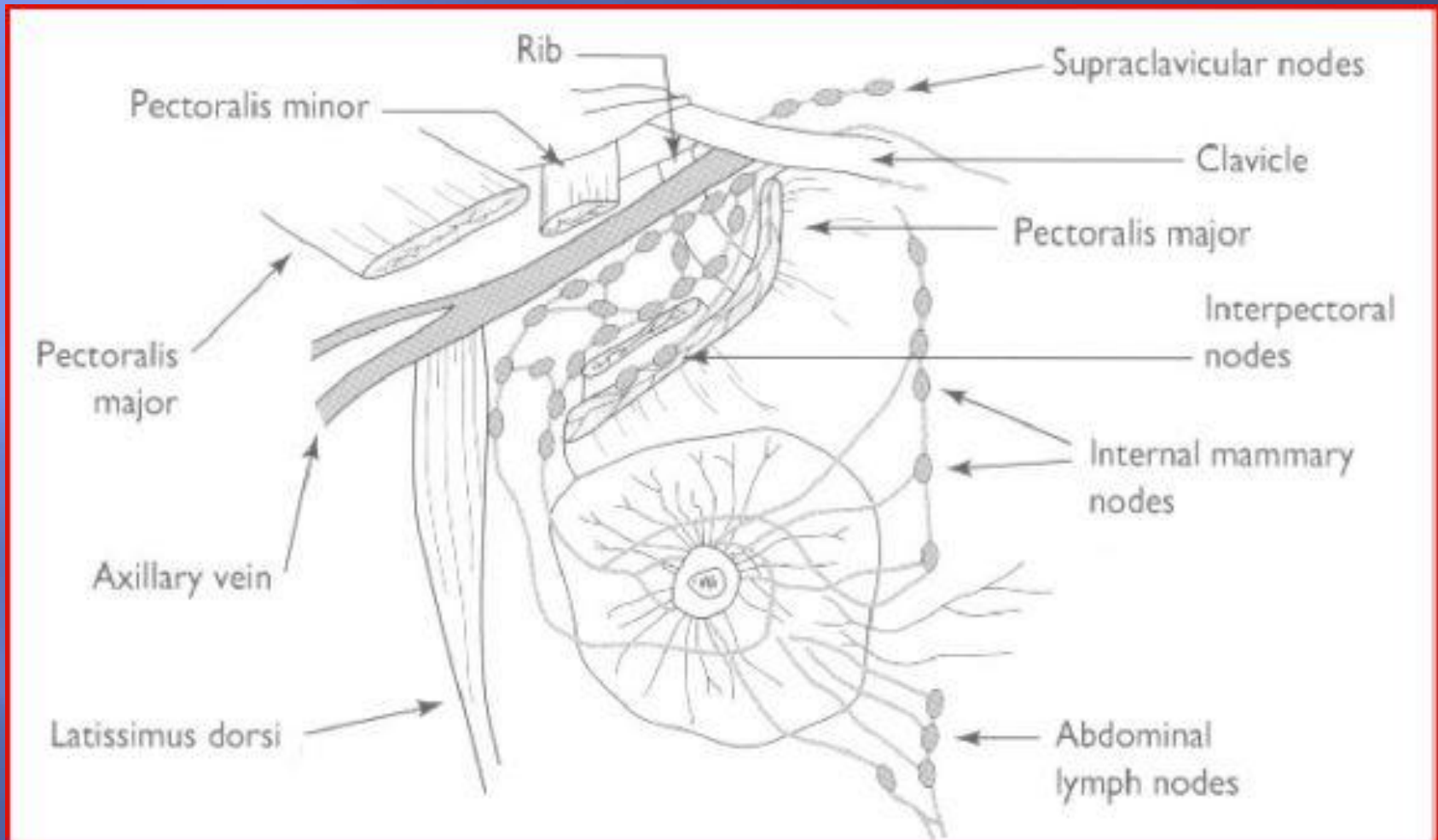
- ❖ Subcutaneous and retro-mammary fat
- ❖ Bulk of breast.
- ❖ No fat beneath areola and nipple

Lymph Nodes

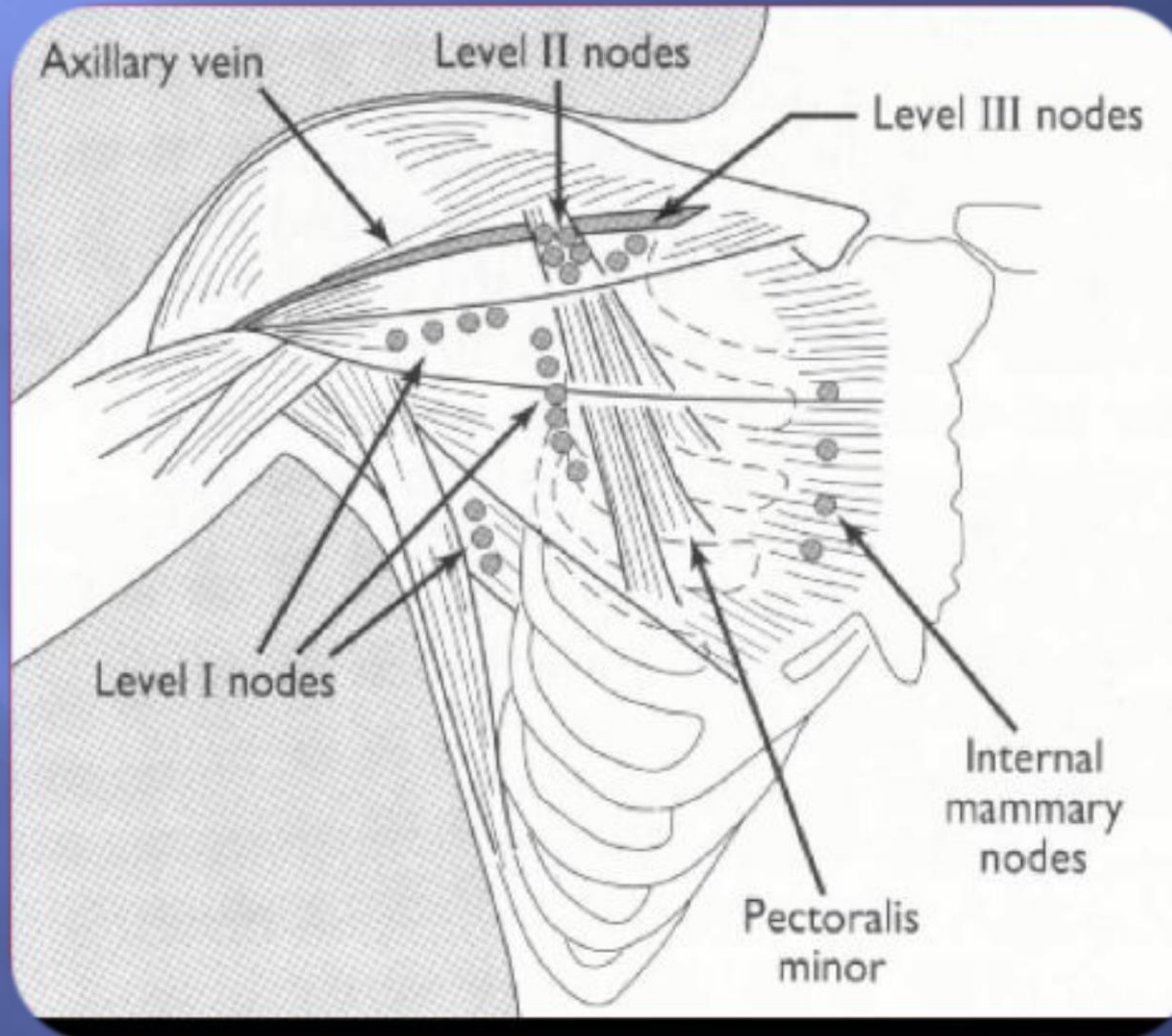
- ❖ Most drain towards axilla.
- ❖ Superficial lymphatic nodes drain skin .
- ❖ Deep lymphatic nodes drain mammary lobules



Lymph Drainage of Breast



Levels of Axillary Nodes



Lymph Nodes

- ❖ Palpate ALL nodes
 - ❖ Axillary
 - ❖ Supraclavicular
 - ❖ Infra-clavicular
-
- ❖ Nodes deep in the chest or abdomen

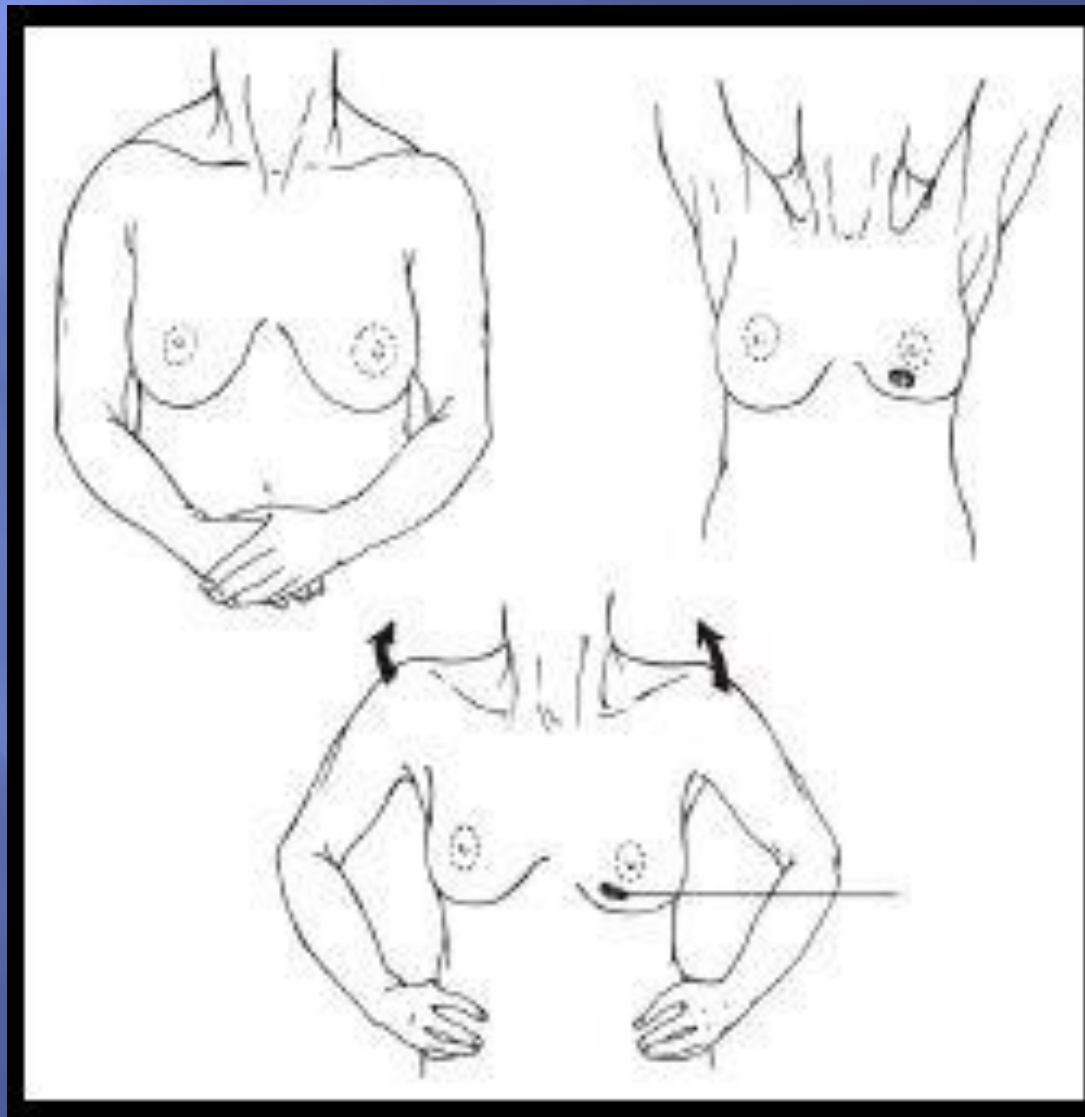
Clinical Breast Exam

Clinical Exam

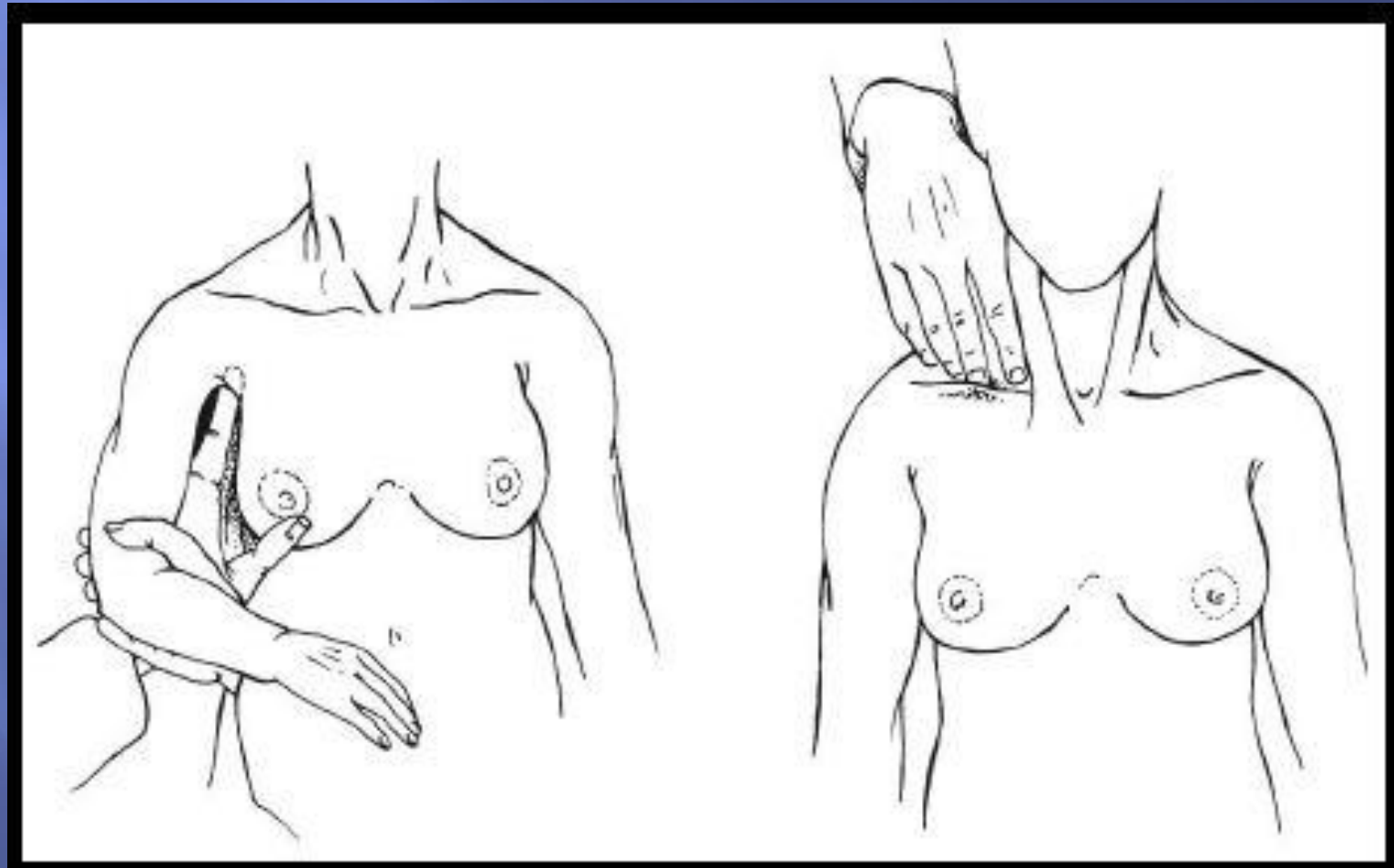
- Inspection
 - Skin
 - Symmetry
 - Masses
 - contour
- Palpable
 - Gland
 - Axilla, Supraclavicular spaces
 - Nipple-areola complex



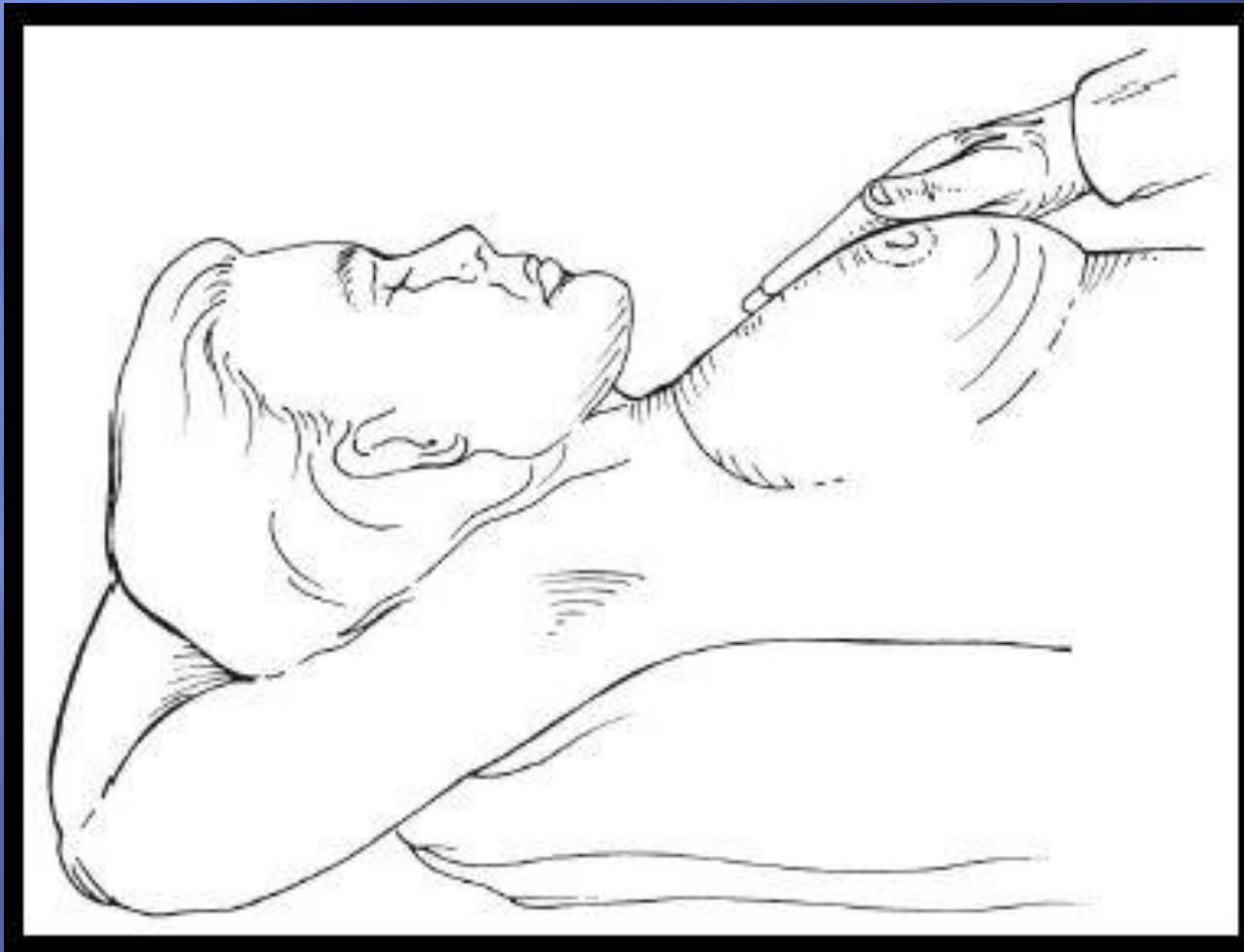
Inspect Both Breasts



Palpate Axilla and Clavicular Nodes



Breast Palpation

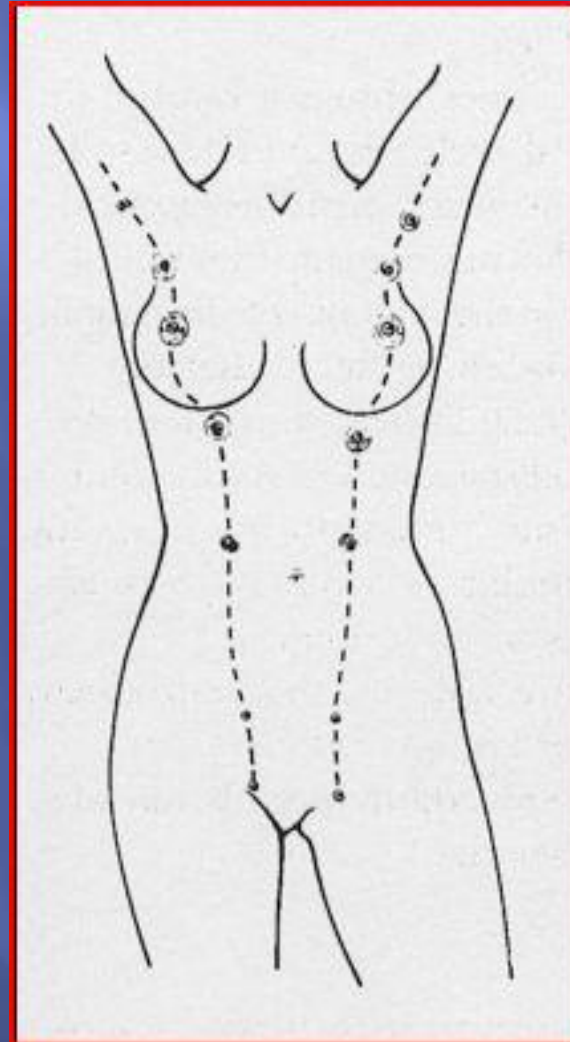


Normal Variations of Breast

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

Milk Lines

Sites of Accessory Nipples and Breasts



Accessory Breast Tissue



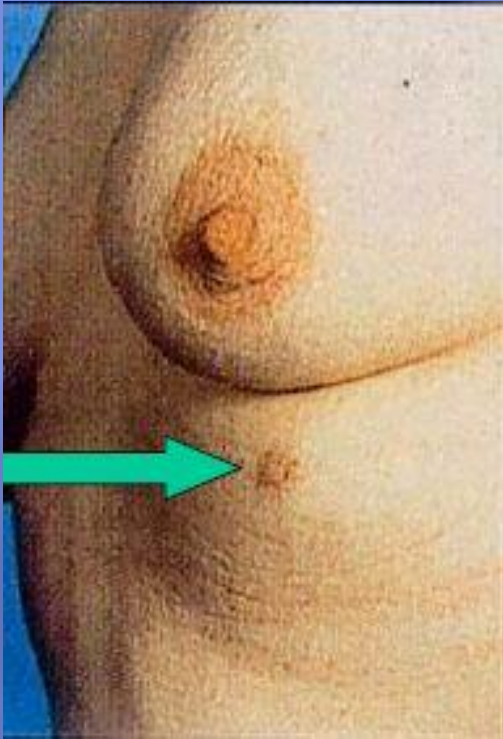
Accessory Tissue

Biopsy

Accessory Nipple



Accessory Nipple and Bilateral Accessory Breasts



Breast with Two Nipples



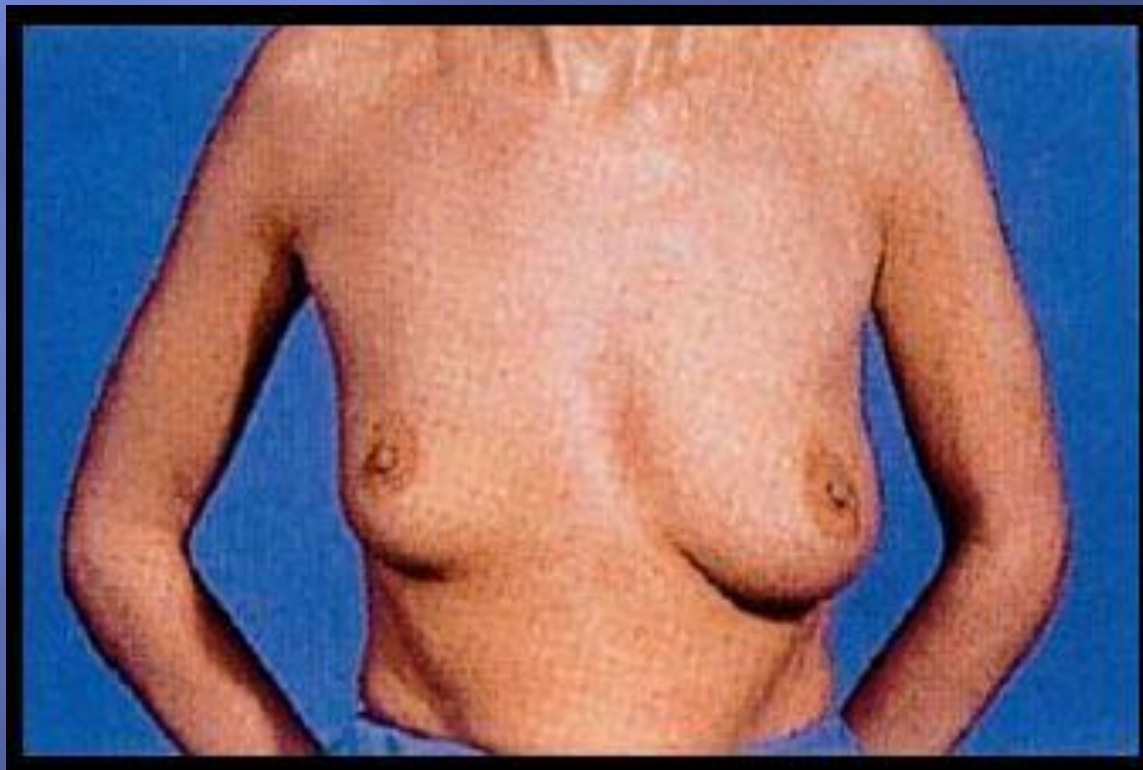
Breast Hair



Breast Asymmetry



Breast Asymmetry



Skin Dimpling and Change in Contour

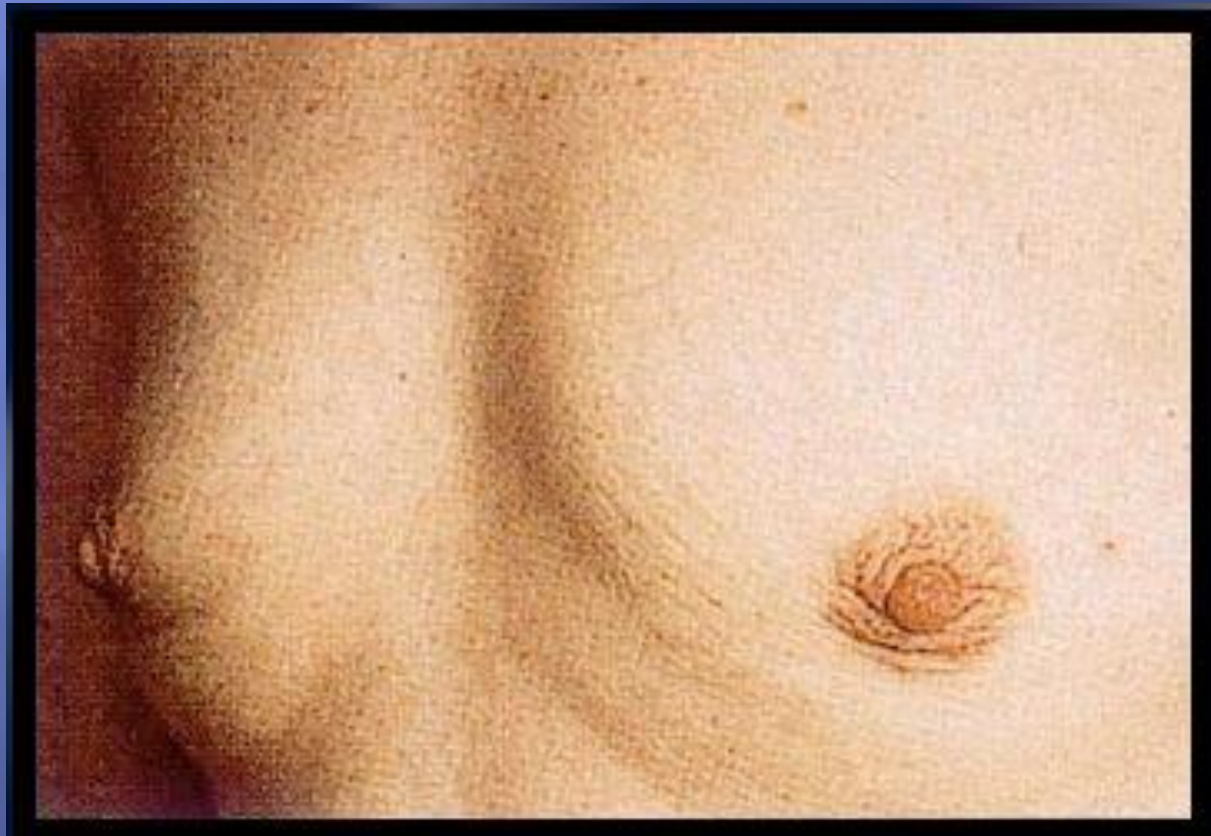


Dimpling due to
Carcinoma



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



Common Benign Breast Disorders

Common Benign Breast Disorders

- ❖ Fibrocystic changes
- ❖ Fibroadenoma
- ❖ Intraductal papilloma
- ❖ Mammary duct ectasia
- ❖ Mastitis. Breast abscess
- ❖ galactocele
- ❖ Fat necrosis
- ❖ cyst simple or complicated
- ❖ Phylloides tumor
- ❖ Male gynecomastia

Benign breast disease

Breast adenoma

Lipoma

Sebaceous cyst

Skin papilloma

Fibrocystic Changes

- ❖ Lumpy breasts
- ❖ Pain is common complain
- ❖ Age 30-40
- ❖ Caused by hormonal changes prior to menses

Fibrocystic Disease

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

Signs and Symptoms

- ❖ Cysts with well-defined margins
- ❖ Singular or multiple
- ❖ May be symmetrical
- ❖ Upper outer quadrant

Signs and Symptoms

- ❖ Pain and tenderness
- ❖ Cysts may appear quickly and decrease in size
- ❖ Lasts half of a menstrual cycle
- ❖ Subside after menopause

Breast Mass

- Breast Cysts
 - Fluid-filled
 - 50% multiple and recurrent
 - ultrasound is diagnostic
 - Hormonally influenced
 - Needle aspirated

Breast Mass



Treatment

- ❖ Aspirate cyst fluid
- ❖ 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
 - Treatment: Reassurance, NSAIDS,
- Non-cyclical pain
 - Non-breast vs breast
 - Imaging
 - Treatment: Reassurance, NSAIDS,

Fibroadenoma

- ❖ **Second most common breast condition**
- ❖ **Late teens to early adulthood**
- ❖ **Rare after menopause**

Fibroadenoma



Signs and Symptoms

- ❖ Firm, rubbery, round, mobile mass
- ❖ Painless, non-tender
- ❖ Solitary can be multiple
- ❖ Well circumscribed
- ❖ Upper-outer quadrant
- ❖ 1-5 cm or larger

Mammogram

Multiple Calcified Fibroadenomas



Indication for surgery

- ▣ 1- more than 4 cm
- ▣ 2- phylloides
- ▣ 3- painful
- ▣ 4- un usual age
- ▣ 5- unclear pathology
- ▣ 6- +VE family history
- ▣ 7- no access for medical follow up
- ▣ 8- giant fibroadenoma

Intraductal Papilloma

- ❖ Slow-growing
- ❖ Overgrowth of ductal epithelial tissue
- ❖ Usually not palpable
- ❖ Most common cause 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



Mammary Duct Ectasia

- ❖ Inflammation and dilation of sub-areolar ducts behind nipples
- ❖ May result in palpable mass
- ❖ 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 ectasia
- ❖ **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**

Dried Secretions from Mammary Duct Ectasia



Yellow Breast Discharge Duct Ectasia



Multi-colored Breast Discharge



Treatment

- ❖ Test for occult blood
- ❖ Imaging
 - Mammogram
 - Sonogram
- ❖ Antibiotics if there is infection

Mastitis

- ❖ Breast infection when bacteria enter the breast via the nipple
- ❖ Ducts infected
- ❖ Fluid stagnates in lobules
- ❖ Usually during lactation
- ❖ 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 abscess

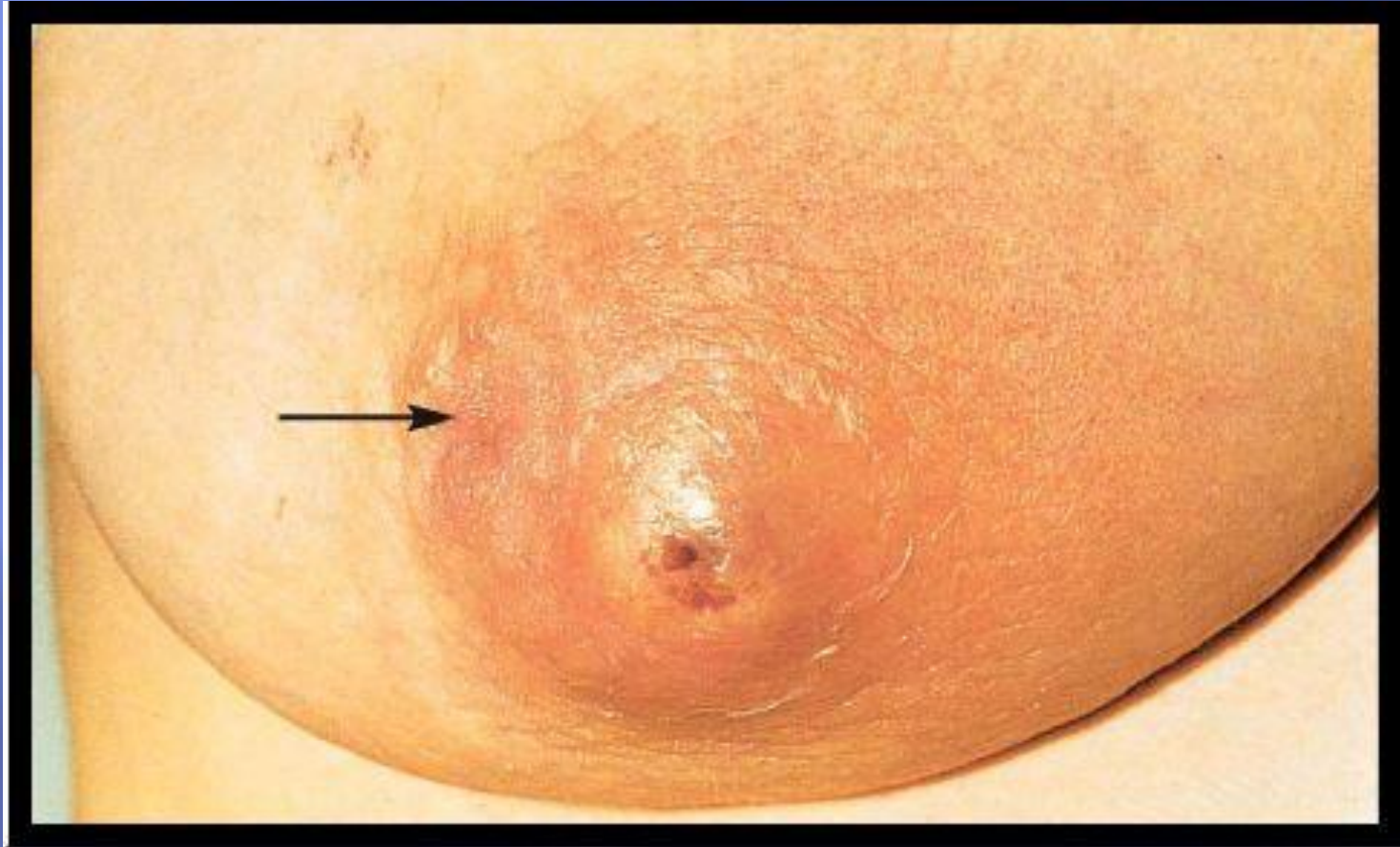
- ❖ Pain
- ❖ Nipple discharge
- ❖ Localized induration
- ❖ Fever



Breast Abscess



Non-Lactating Breast Abscess



Arrow points to inverted nipple

Breast Abscess

- Treatment
 - Antibiotics
 - Needle aspiration
 - Incision and drainage



Puerperal Breast Abscess



Before treatment

Local anesthetic

After treatment

Abscess occurred during lactation

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

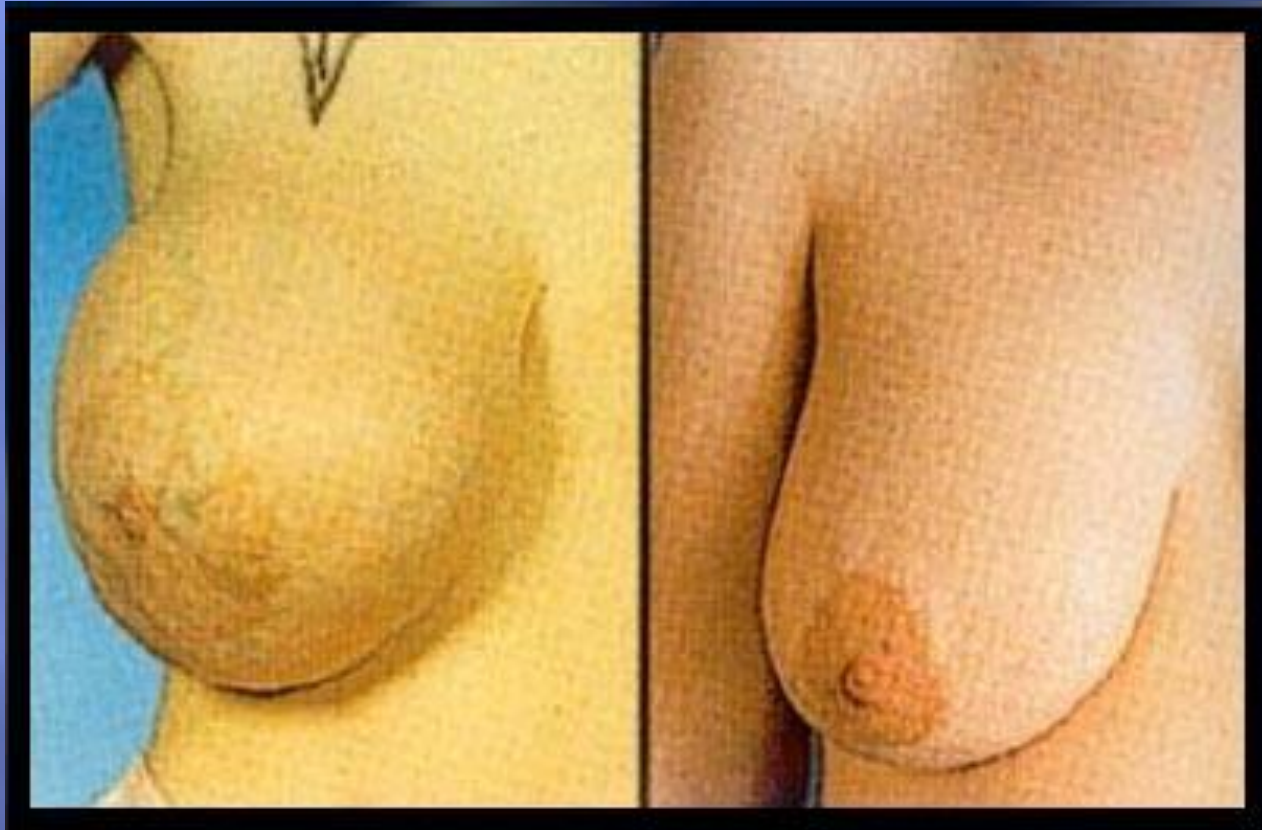
Breast Hematoma



Phylloides Tumor

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

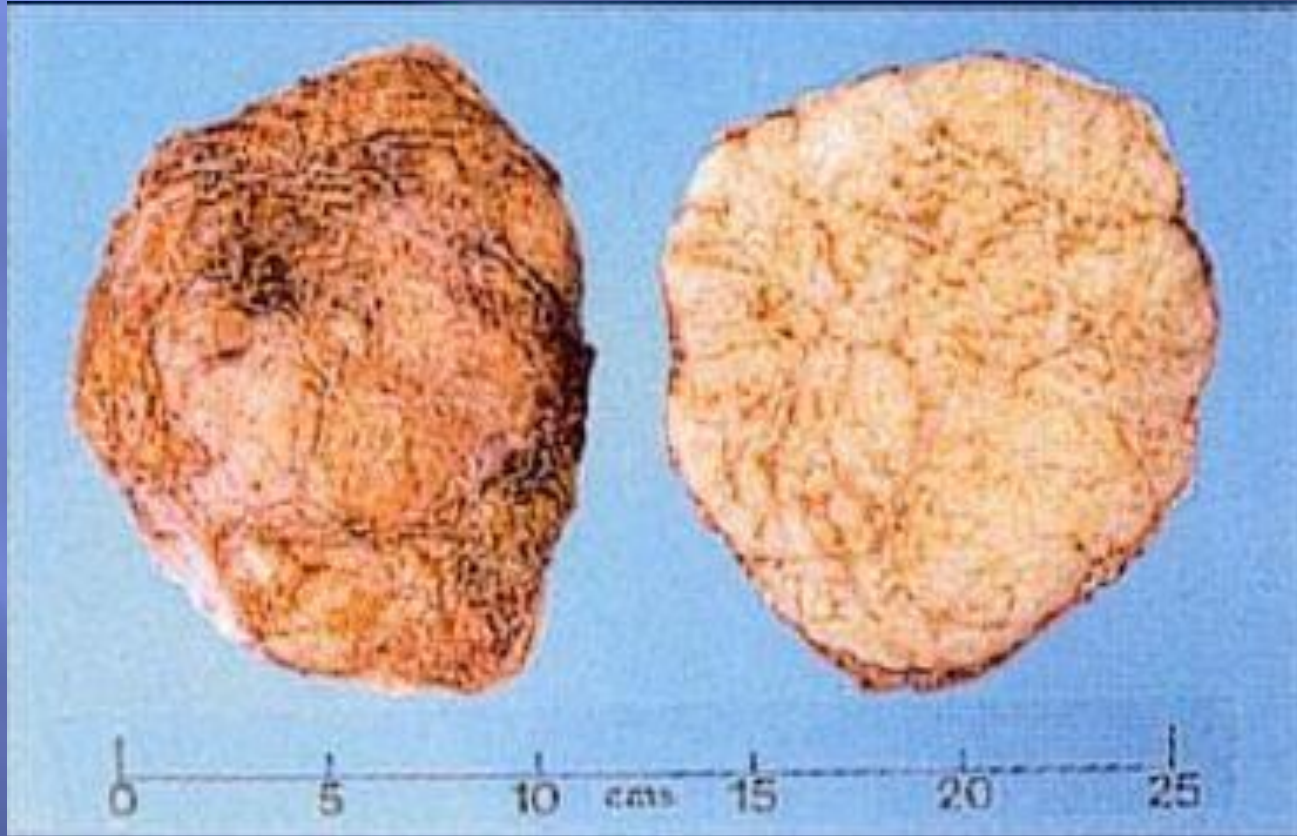
Giant Fibroadenoma



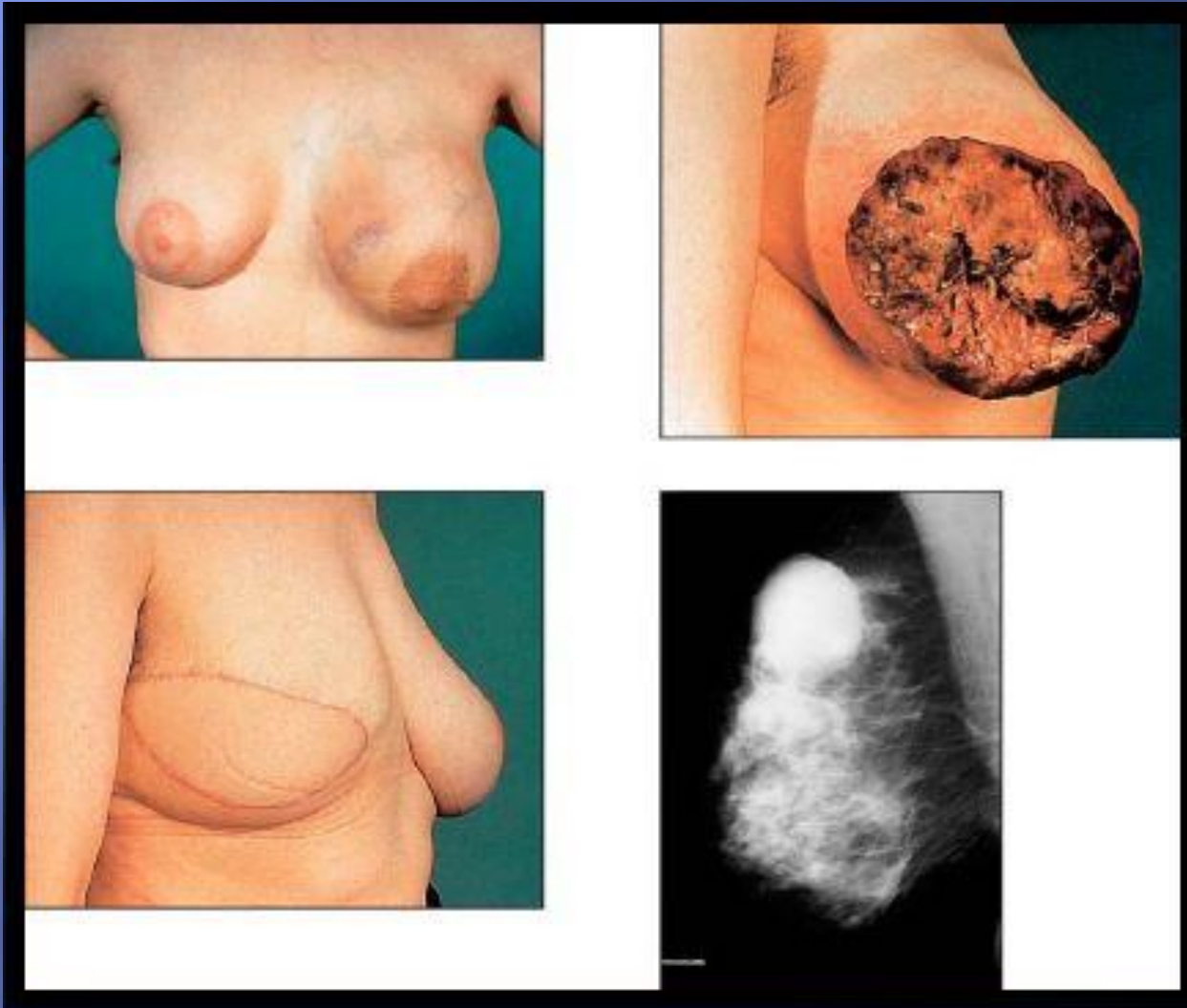
Before Surgery

After Surgery

Cross Section of Giant Fibroadenoma



Malignant Phylloides Tumor



galactocele

Galactocele is a cyst containing milk

There is pain but no fever

Ultrasound is diagnostic

Needle aspiration



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

Galactorrhea



Spontaneous nipple discharge

Investigations:

- Mammography
- Clinical examination

Abnormal

Investigate as for mammographic abnormality or mass lesion

Normal

Single duct discharge

Suspicious* or troublesome

Surgery

Not suspicious or troublesome

Reassure

Multiple duct discharge

Troublesome

Surgery

Not troublesome

Reassure

* Bloodstained, moderate or large amounts of blood on testing or persistent

Clinical Characteristic

- ❖ **Physiologic**
 - Usually bilateral
 - Multiple ducts
 - by squeezing the nipple

Physiological Breast Discharge



Clinical Characteristic

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



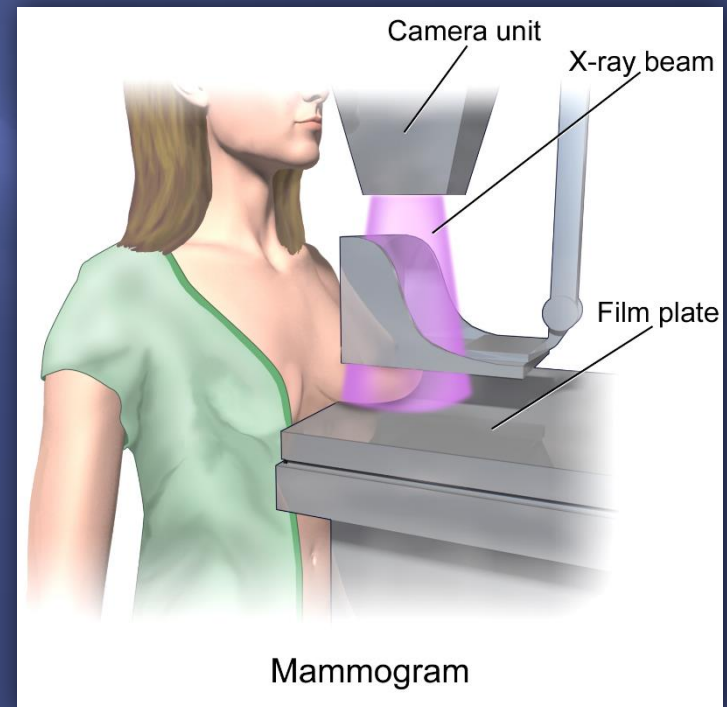
Bloody discharge

Bloody Nipple Discharge



Mammography

- ❖ Screening tool
 - Age of 40
- ❖ Estimated reduction in mortality 15 – 25%
- ❖ Densities and calcification



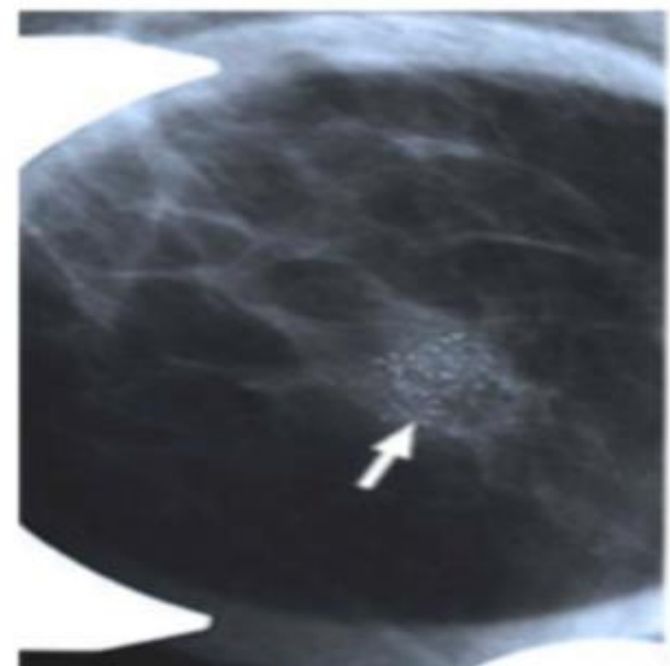
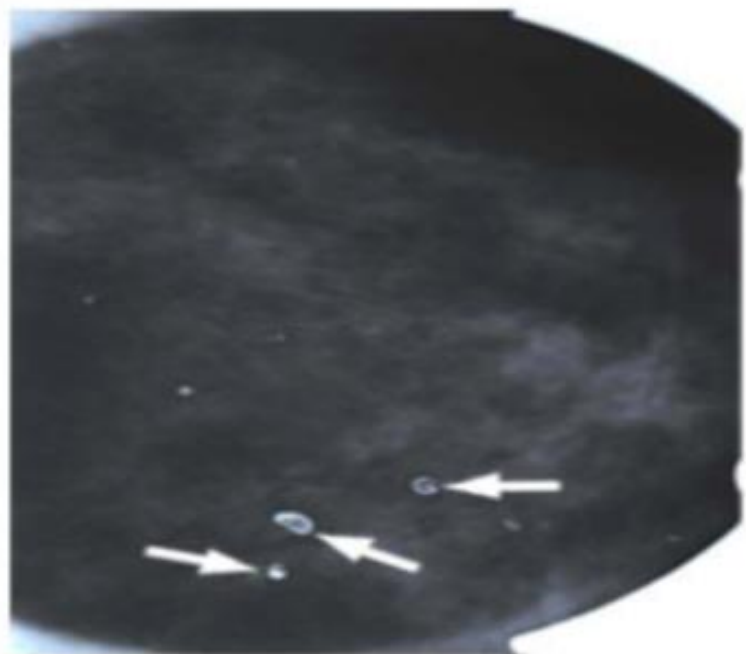
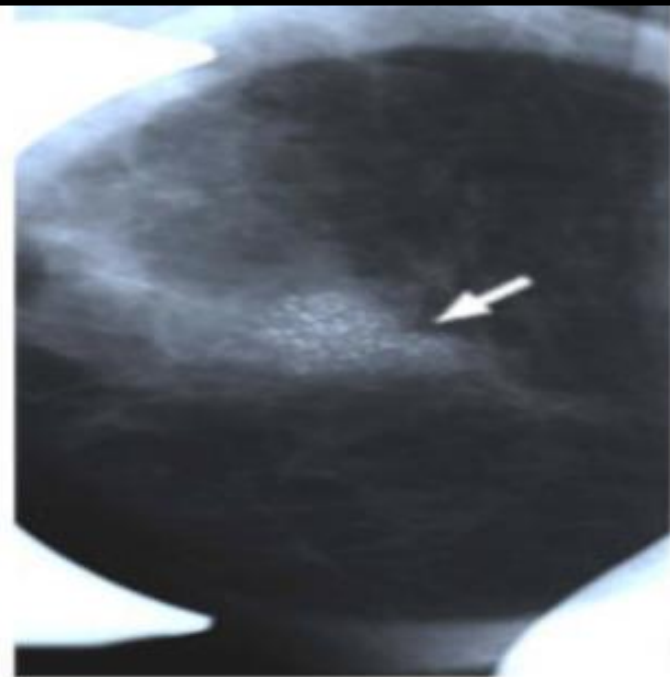
Calcification

❖ **Macrocalcifications**

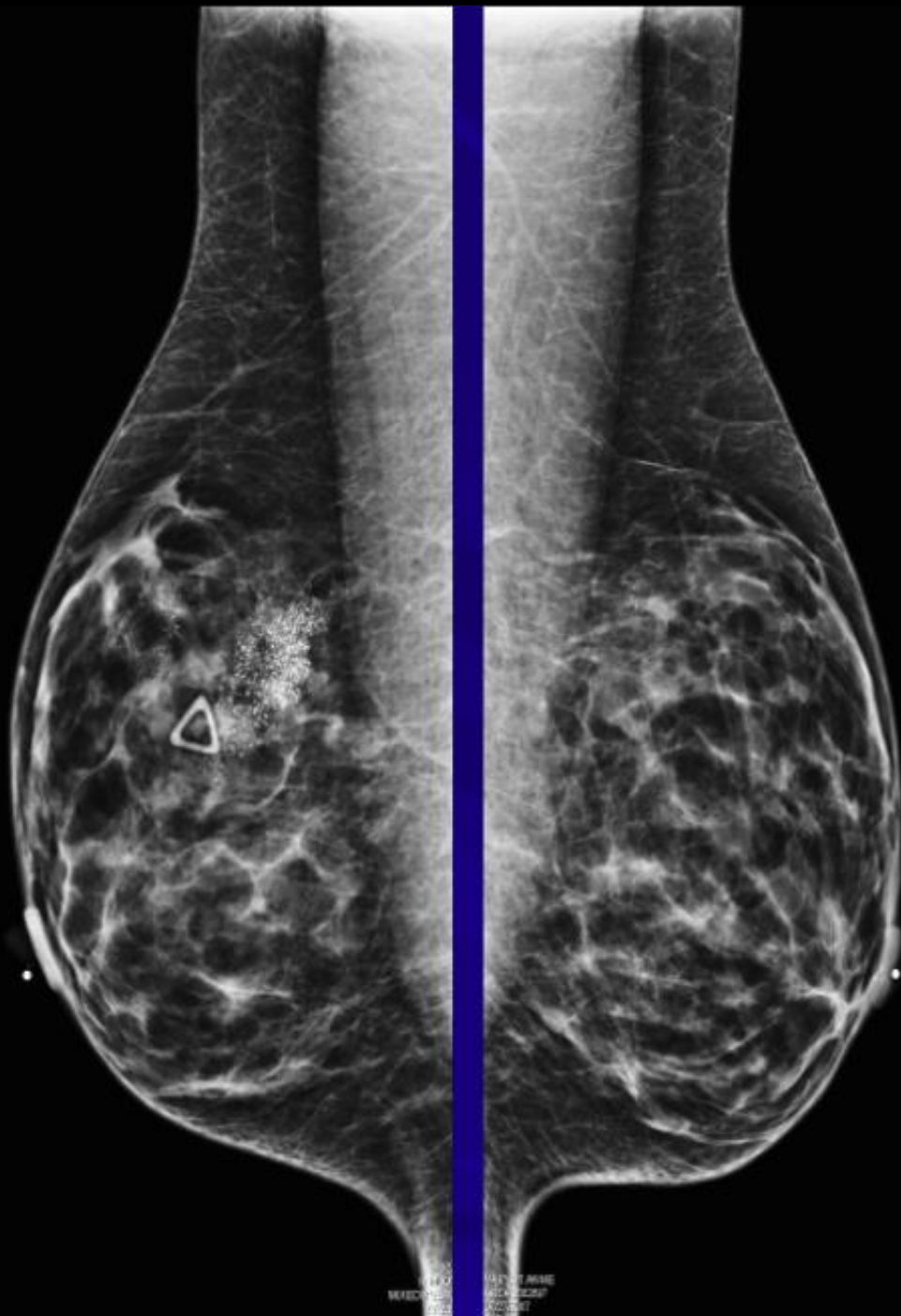
- Large white dots
- Almost always non-cancerous and require no further follow-up

❖ **Microcalcifications**

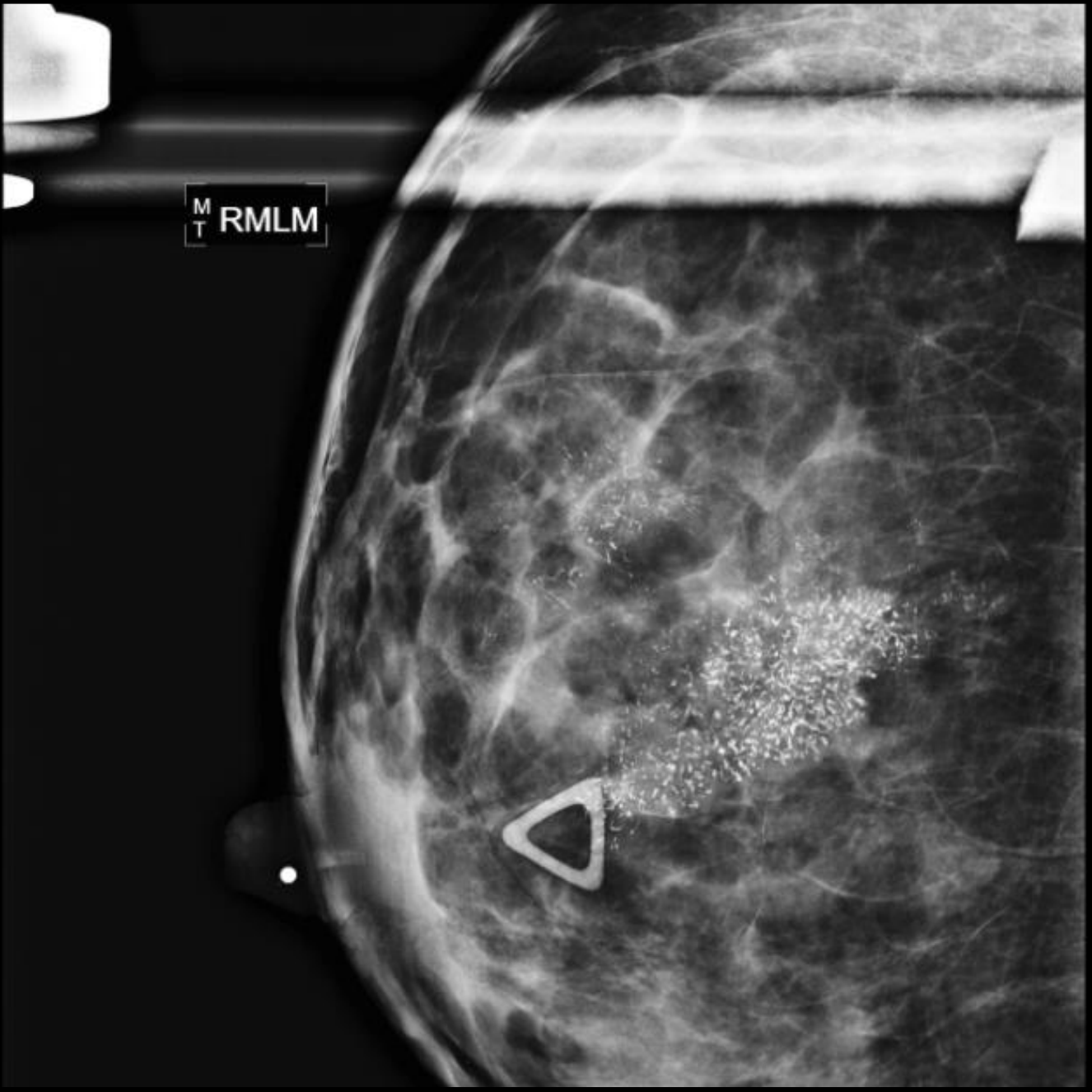
- Very fine white specks
- Usually non-cancerous but can sometimes be a sign of cancer
- Size, shape and pattern



M
T RMLO



M
T LMLO



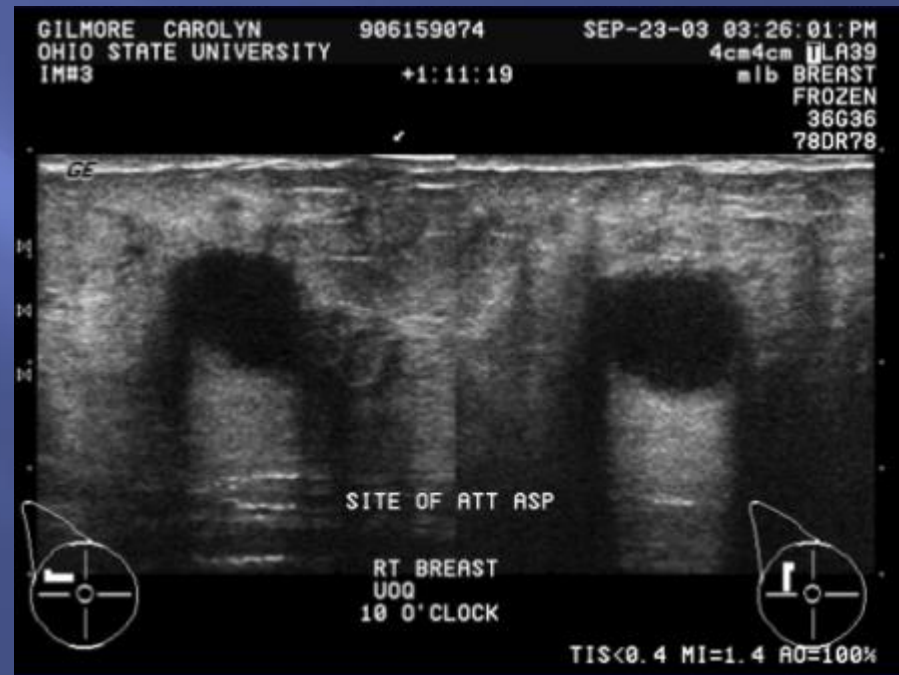
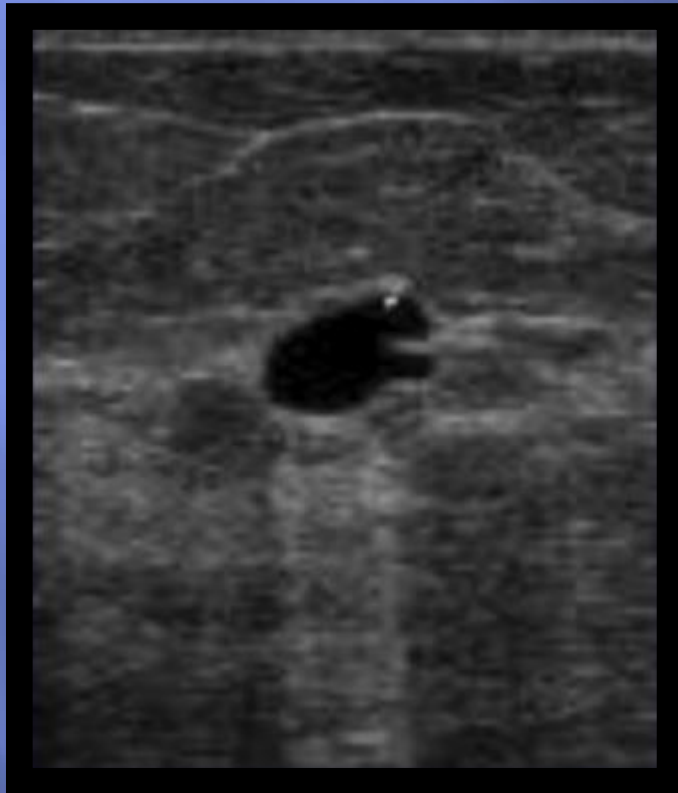
M
T RMLM

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 fine capsule	Microlobulation

Ultrasound



MRI

❖ High risk patients

- History of breast cancer
- LCIS, atypia
- 1st degree relative with breast cancer
- Very dense breast

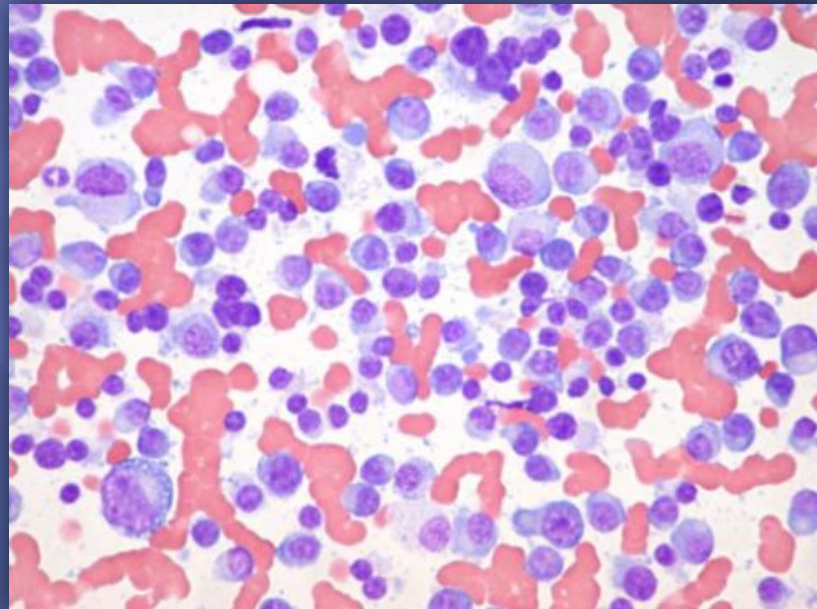
❖ High sensitivity

Diagnosis

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

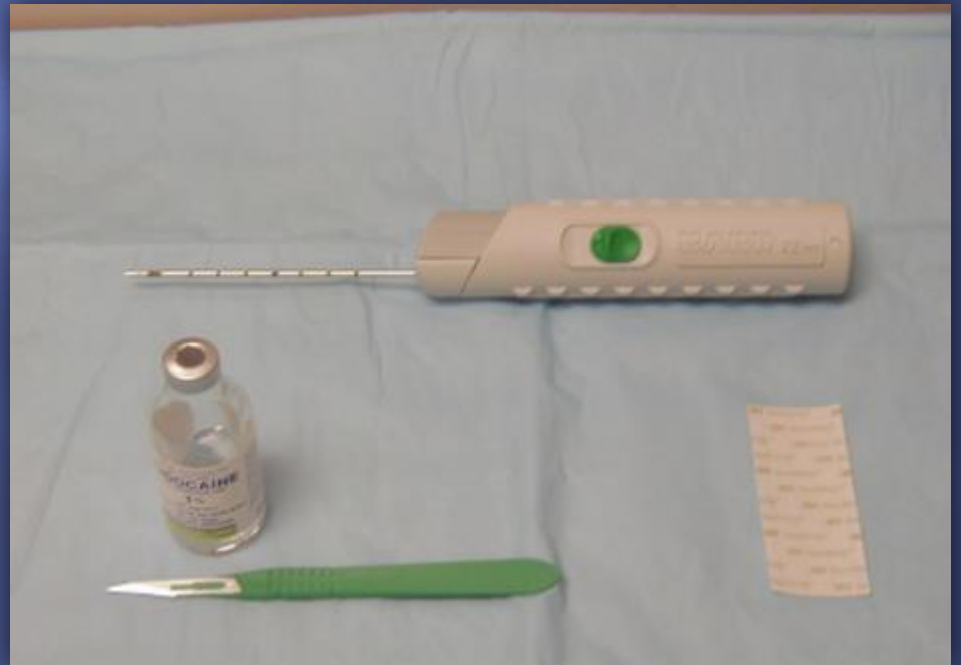
Fine Needle Aspiration

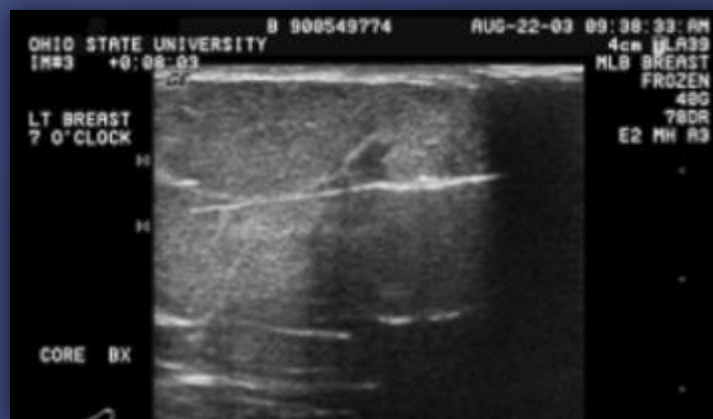
- ❖ Fast, inexpensive
- ❖ 96% accuracy
- ❖ Institution dependent
- ❖ Unable to differentiate between in-situ vs CA



Core Needle Biopsy

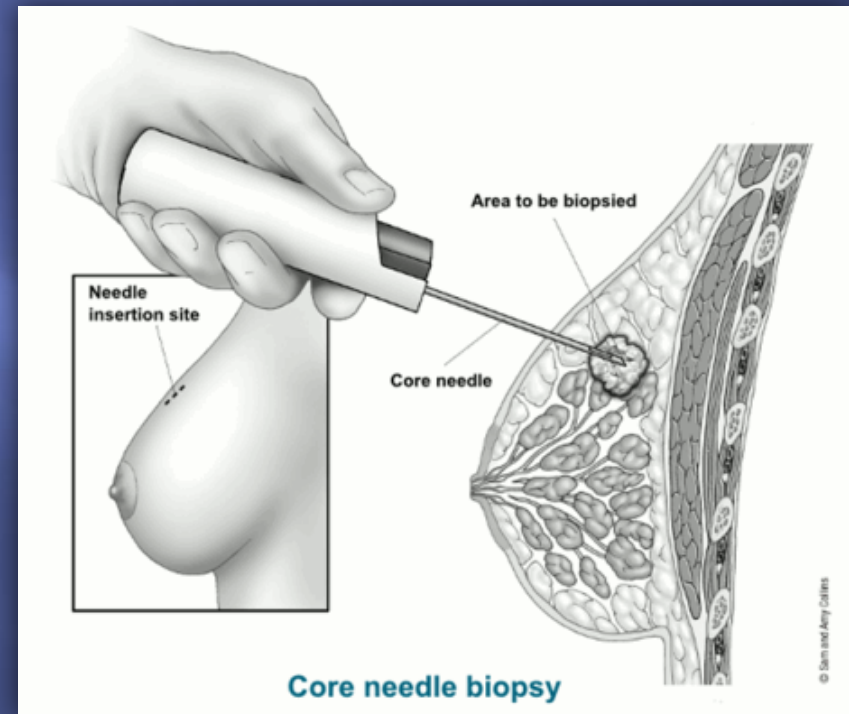
- ❖ 14 - 18 gauge spring loaded needle
- ❖ Tissue
- ❖ Multiple

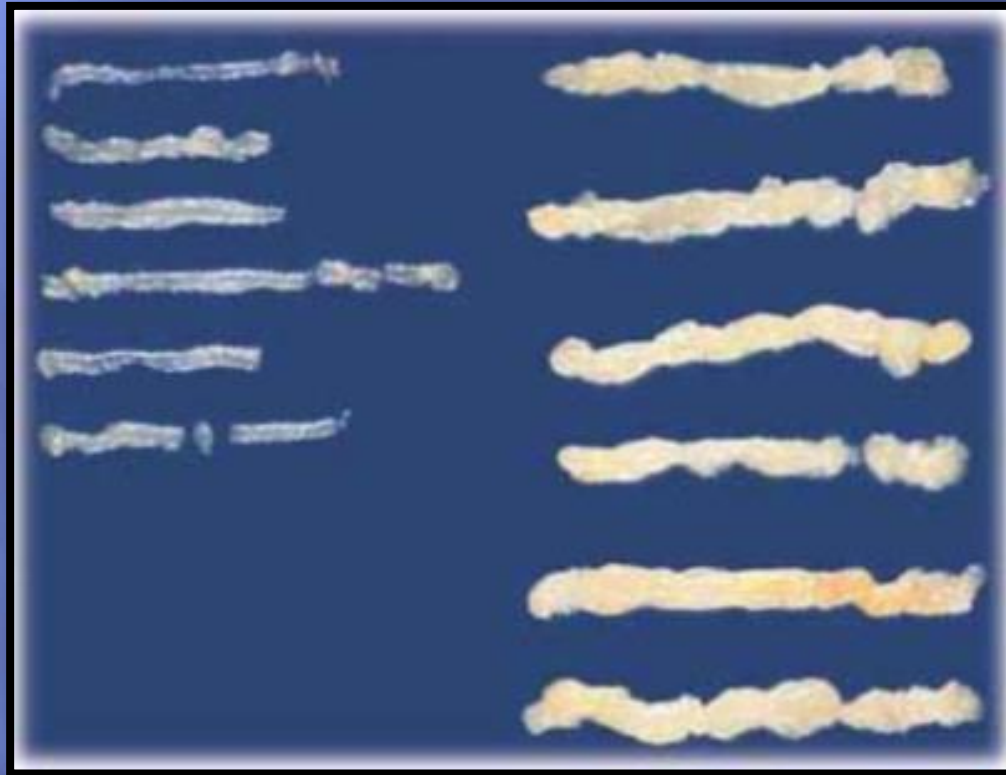




Large Core Biopsy

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





Core Biopsy

Vacuum Assisted

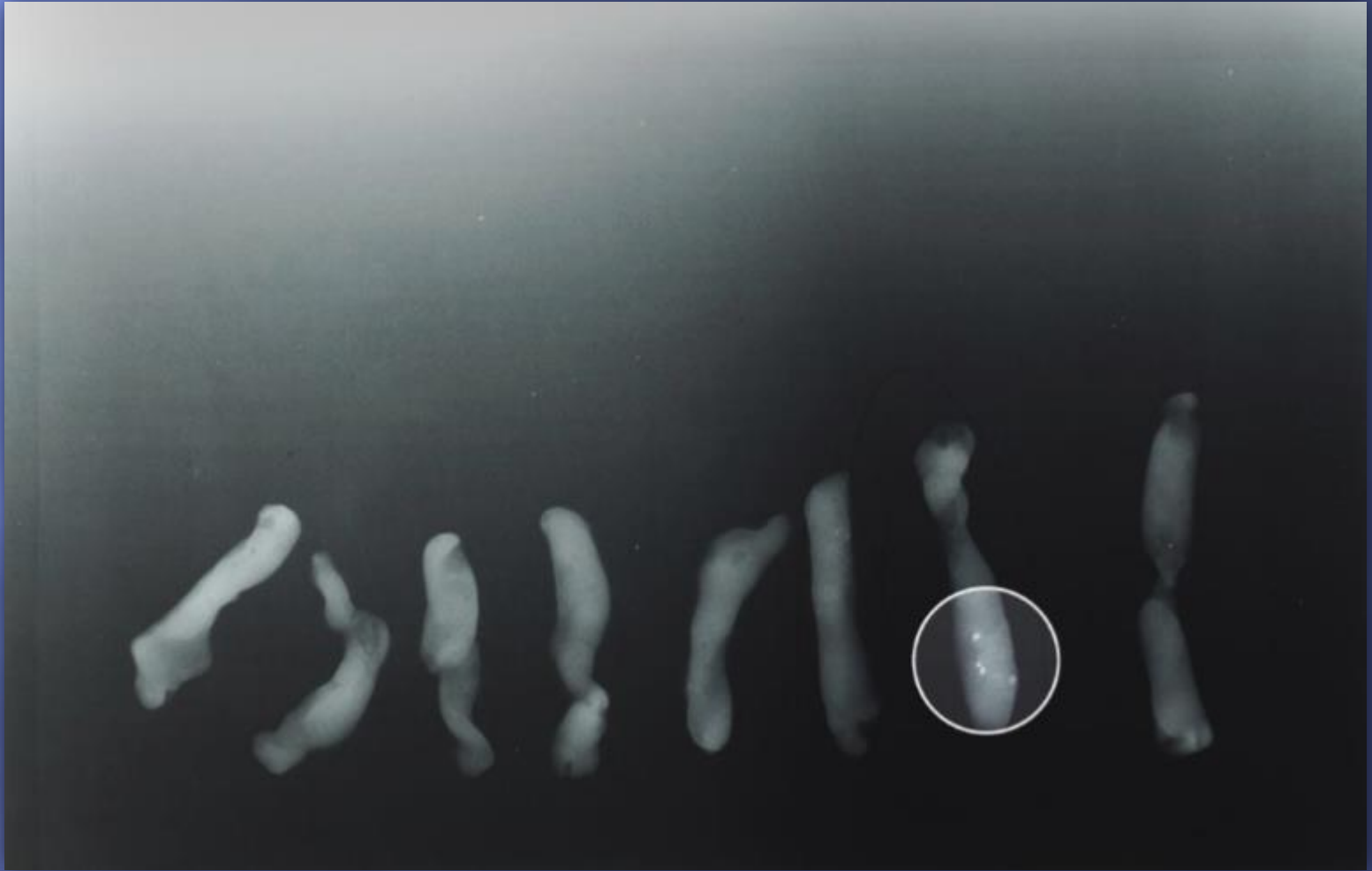
Stereotactic Biopsy

- ❖ Suspicious mammographic abnormalities
- ❖ Patients lay prone





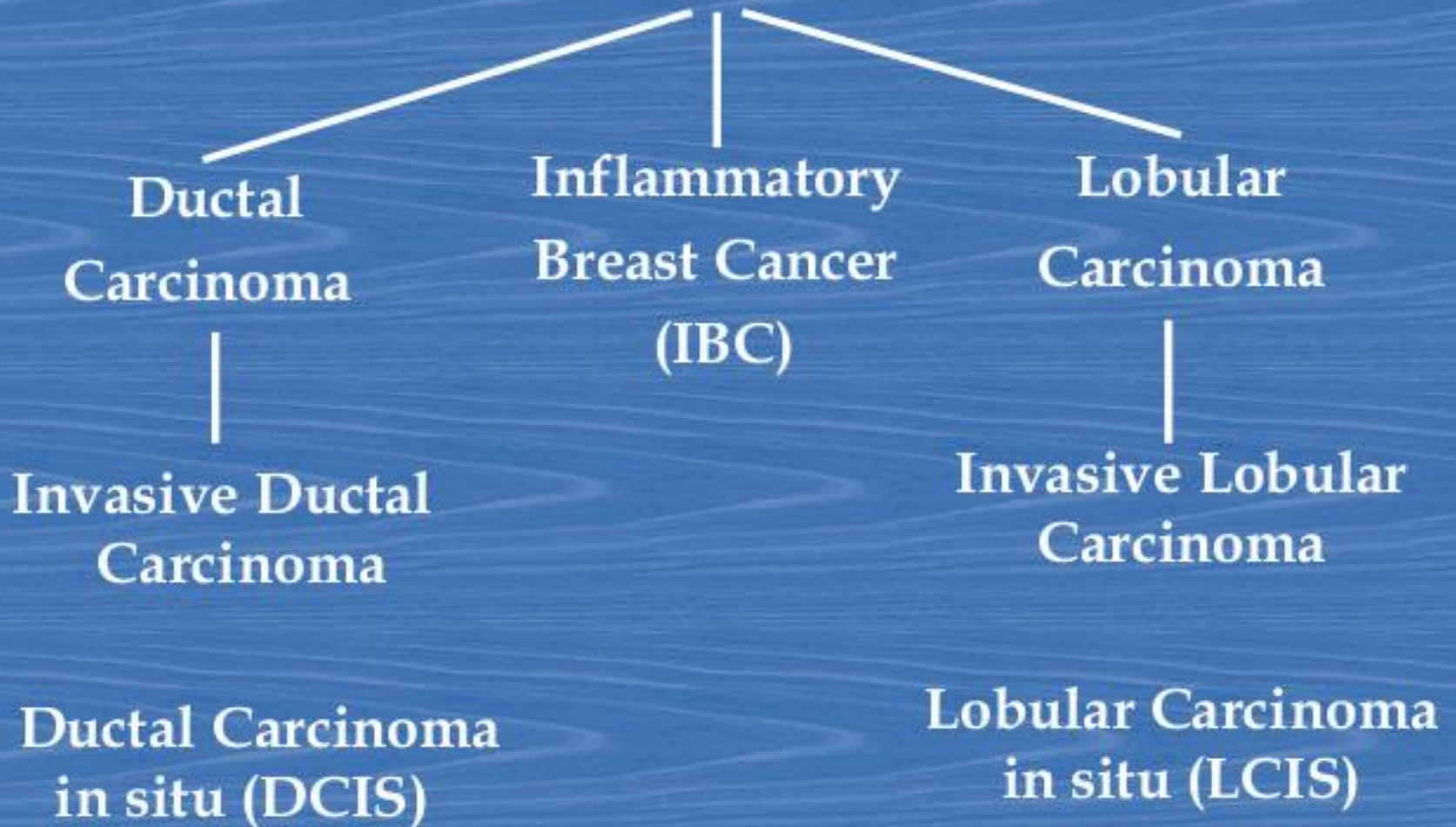
Mammotome
ETHICON ENDO



Excisional Biopsy

- ❖ Atypical lesions
- ❖ LCIS
- ❖ Radial scar
- ❖ Atypical papillary lesions
- ❖ Phyllodes
- ❖ Inadequate tissue

TYPES OF BREAST CANCER



Screening

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

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

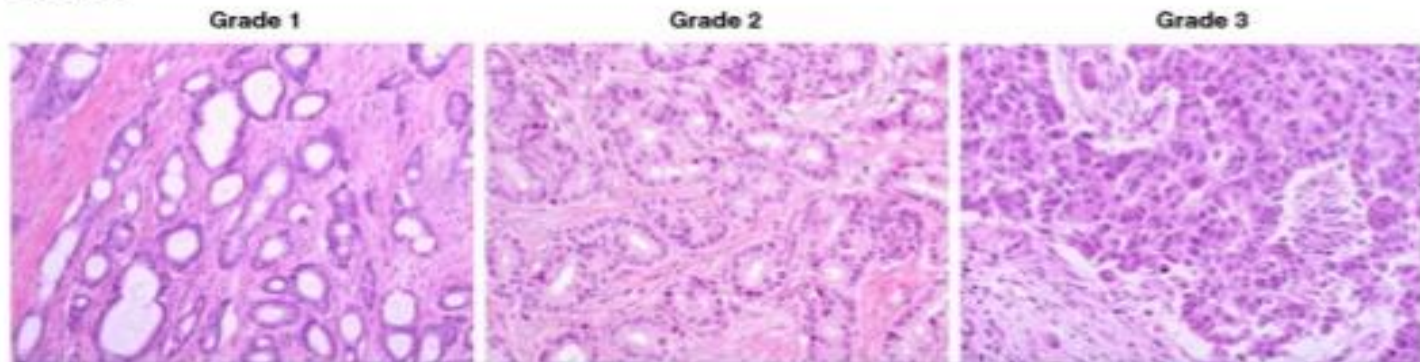
PATHOLOGICAL REPORT

❑ **Histological type**

- Ductal Carcinoma In-Situ (DCIS)
- Lobular Carcinoma in Situ (LCIS)
- Infiltrating Ductal Carcinoma (IDC)
- Infiltrating Lobular Carcinoma (ILC)
- *Special types:*
 - *endocrine responsive:* Cribriform, Tubular, Mucinous
 - *endocrine non-responsive:* Apocrine, Medullary, Adenoid Cystic, Metaplastic

❑ **Margins:** >1 mm for the invasive component; >2 mm for DCIS

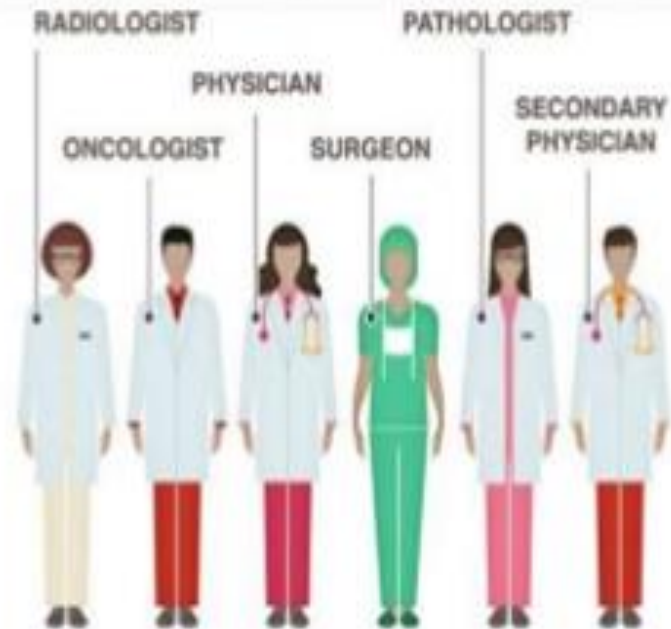
❑ **Grade**



Management of Ca Breast

Options available;

- I. *Surgery*
- II. *Radiotherapy*
- III. *Hormone Therapy*
- IV. *Chemotherapy*



Carcinoma breast

Type

Ductal carcinoma

1-non invasive (DCIS)

2-invasiveductal carcinoma

LOBULAR Carcinoma

1-invasive

2-non invasive(LCIS)

Paget's disease of the nipple

Sarcoma

Types of Breast Cancer

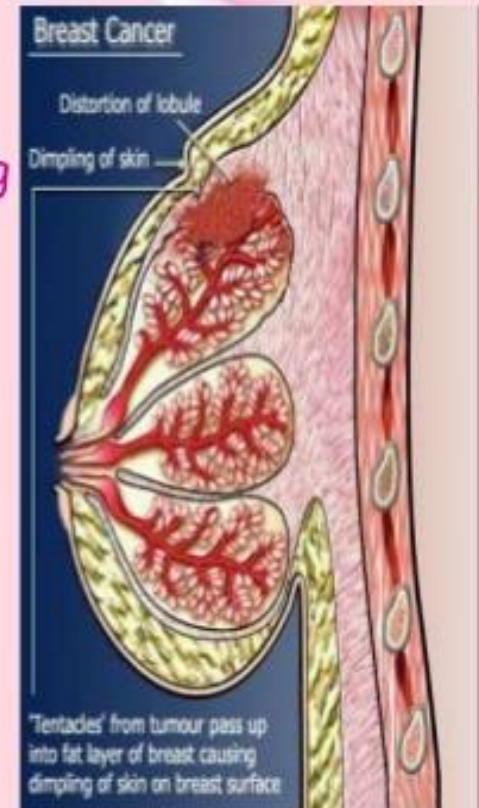


Ductal Carcinoma

- Originate in ducts that carry milk to nipples
- If cancer confined to duct = in situ (DCIS)
- Usually found on mammogram
- If moved beyond duct = invasive or infiltrating

Lobular Carcinoma

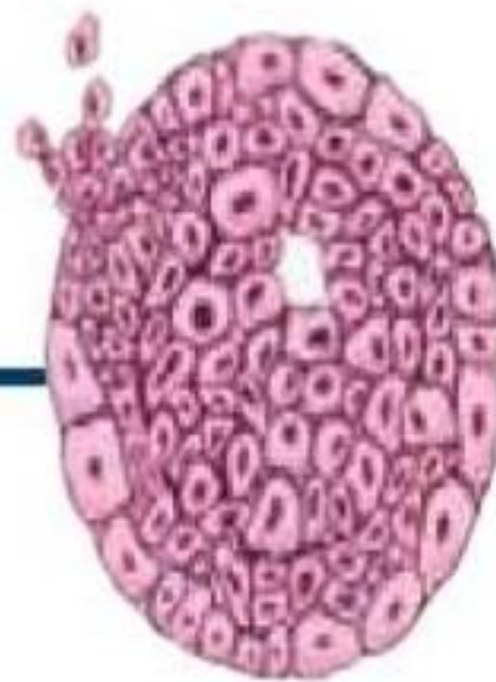
rare



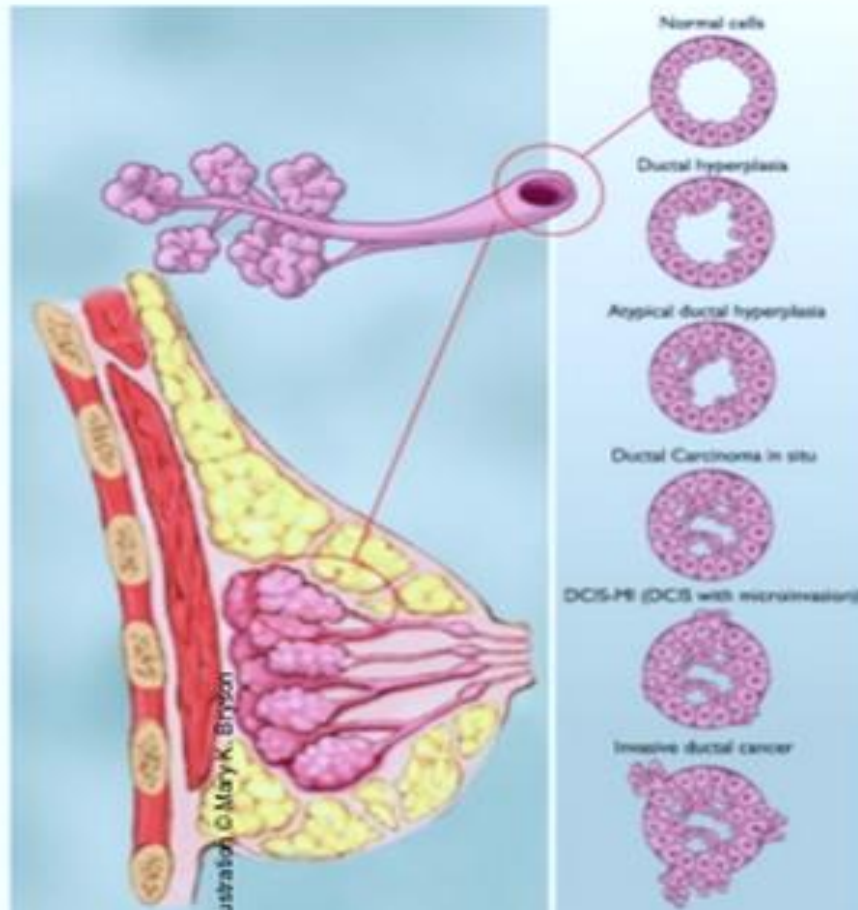
**non-
invasive
cells**



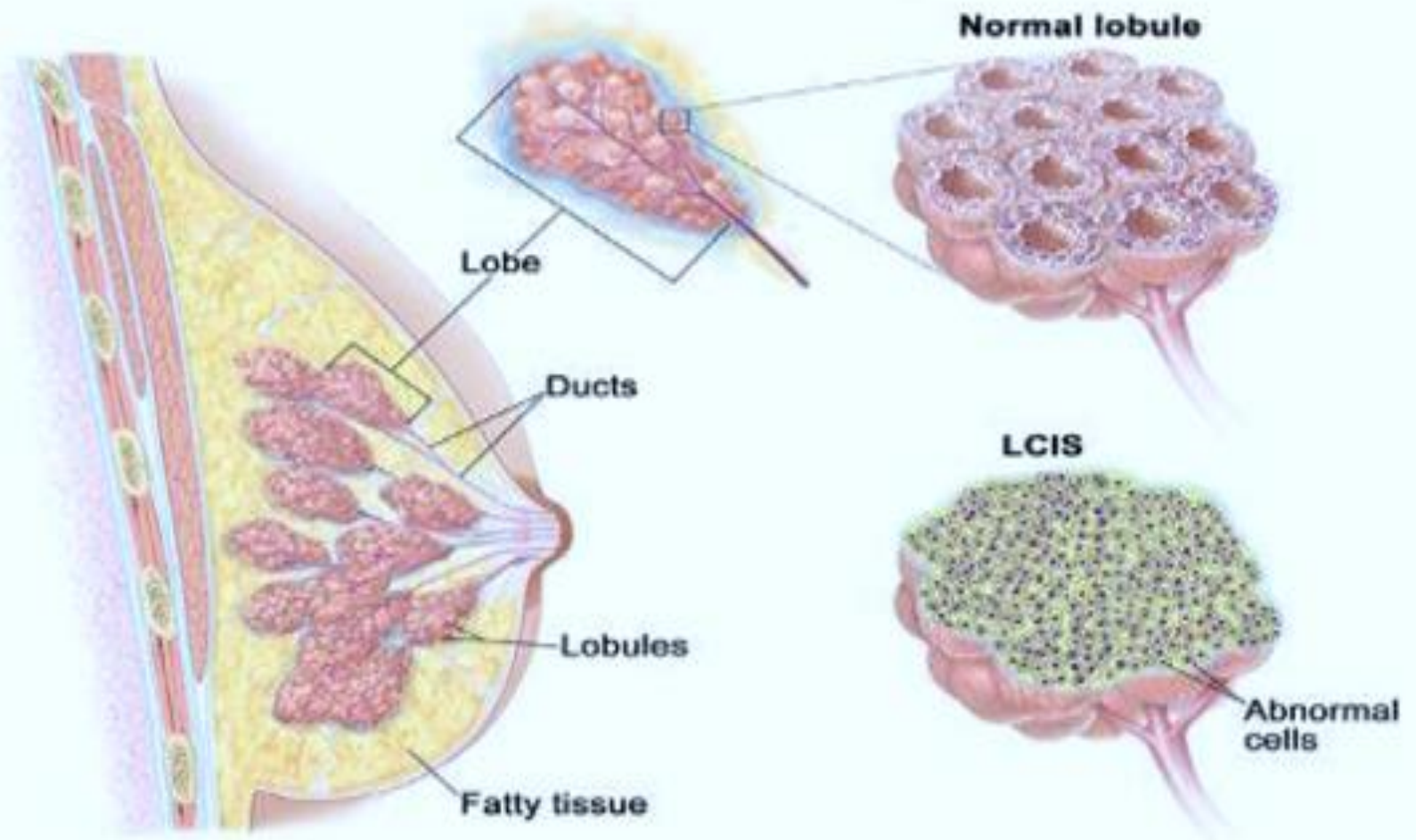
**invasive
cells**



DUCTAL CARCINOMA IN SITU



Lobular Carcinoma In Situ (LCIS)





Lump



Skin dimpling



Change in skin color or texture



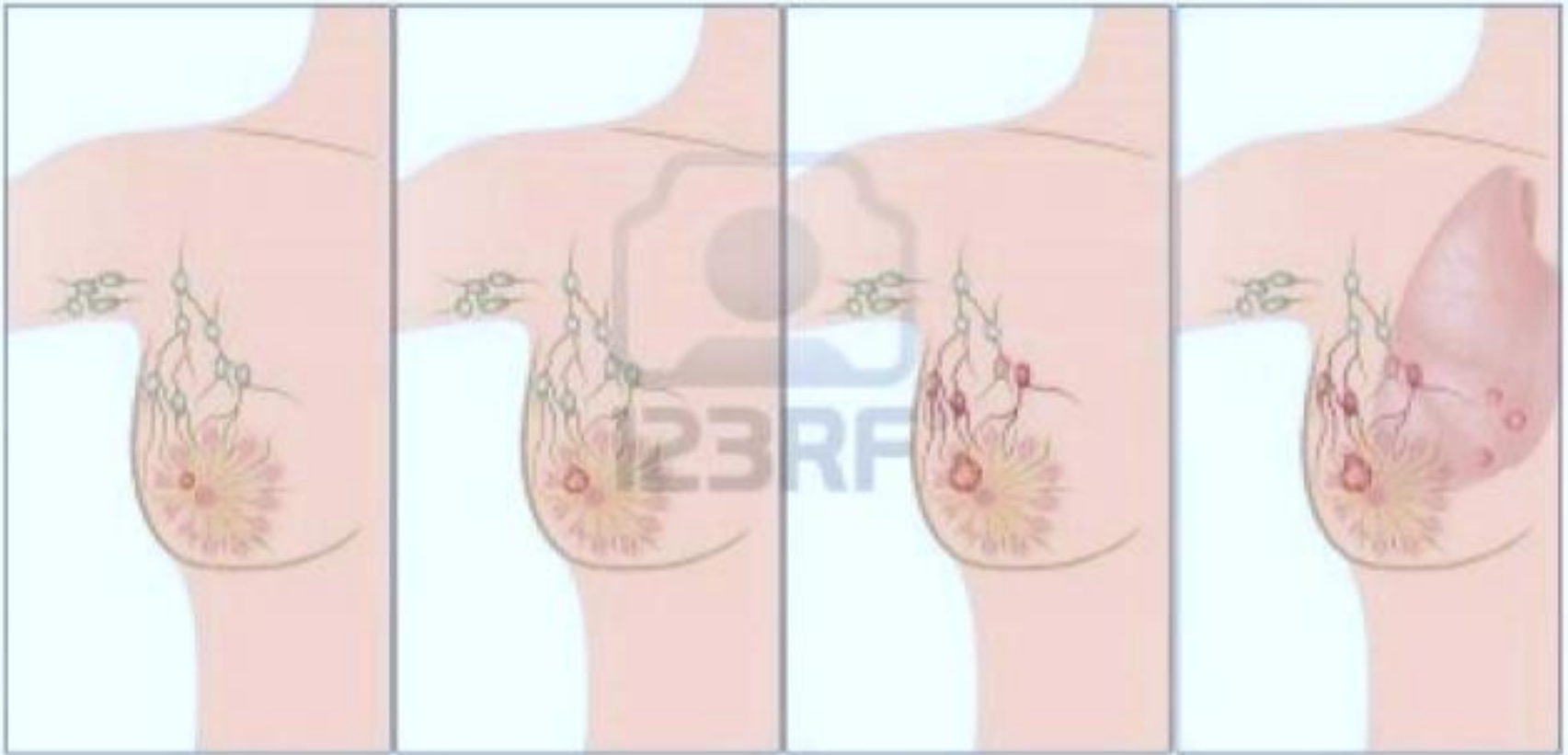
Change in how the nipple looks, like pulling in of the nipple.



Clear or bloody fluid that leaks out of the nipple

Clear or bloody fluid
that leaks out of
the nipple

Stages of Breast Cancer



Stage I

Stage II

Stage III

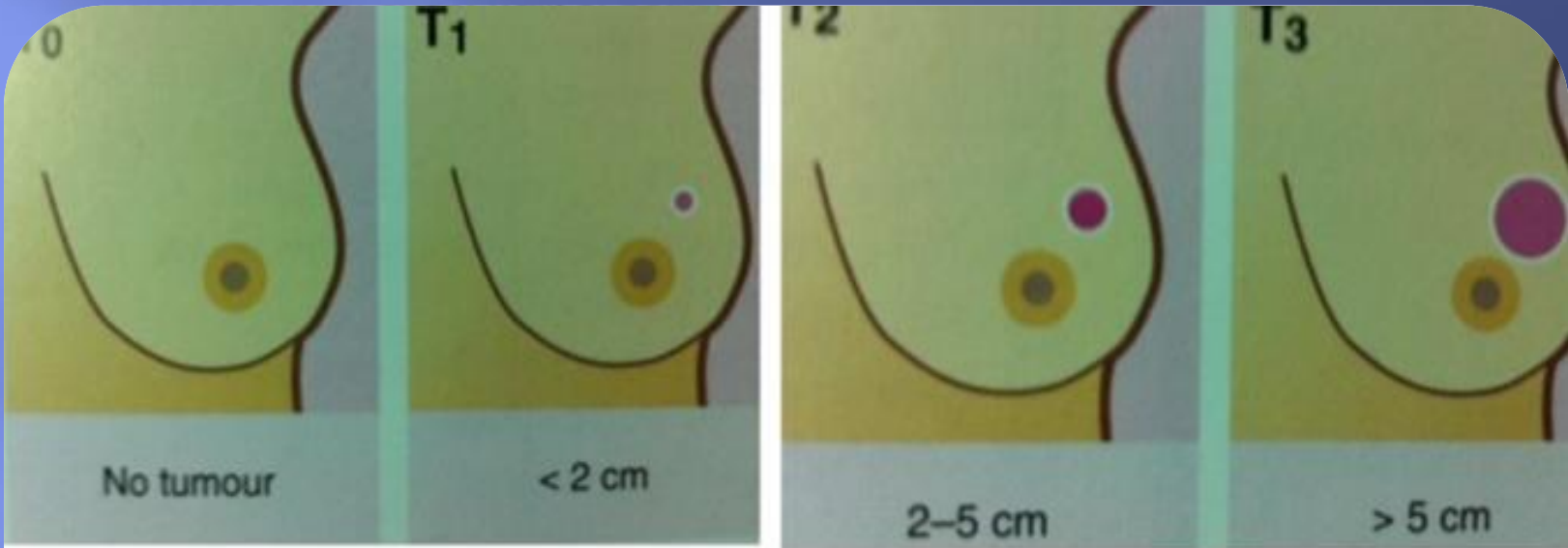
Stage IV

Stage I

Stage II

Stage III

Stage IV



Extension to skin or chest wall, or both

⚡ T = Primary Tumor

⚡ Tis (T0) = carcinoma in situ

⚡ T1 = less than 2 cm in diameter

⚡ T2 = between 2 and 5 cm in diameter

⚡ T3 = more than 5 cm in diameter

⚡ T4 = any size, but extends to the skin or chest wall

STAGING OF BREAST CANCER

The TNM staging system

This system takes into account:

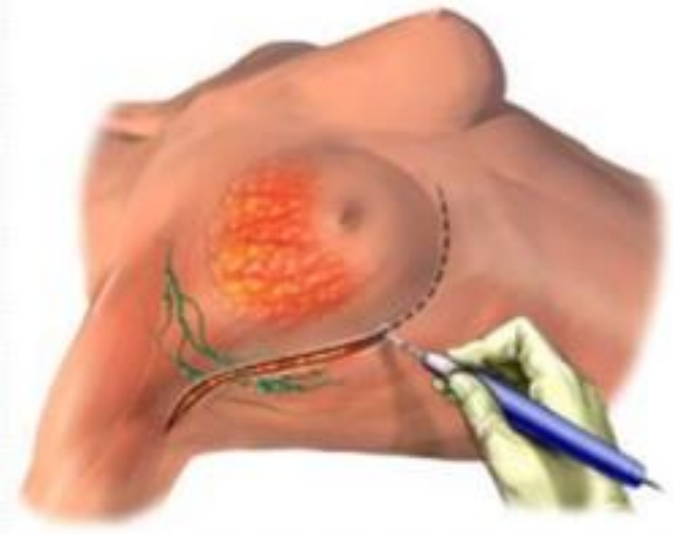
- ▣ the tumor size and spread (T),
- ▣ whether the cancer has spread to lymph nodes (N) and
- ▣ whether it has spread to distant organs (M) for metastasis

STAGING OF BREAST CANCER

- ▣ **Stage 0** : *Non – Invasive breast cancer. Has not spread to breast tissues.*
- ▣ **Stage I** : *≤ 2cm and has not spread to lymph nodes.*
- ▣ **Stage II**
 - Stage IIA* : *≤ 2 cm and has spread to lymph nodes or*
 - 2-5 cm and has spread to lymph nodes.*
 - Stage IIB* : *2-5 cm and has spread to lymph nodes or*
 - > 5 cm and has not spread to lymph nodes.*

I. SURGICAL Approaches

1. Total (Simple) Mastectomy
2. Total Mastectomy with Axillary Clearance
3. Modified Radical Mastectomy [MRM]
 - 1) Patey's Operation
 - 2) Scanlon's Operation
 - 3) Auchincloss' MRM
4. Radical Mastectomy of Halsted
5. Conservative Breast Surgeries
 - 1) Wide Local Excision [WLE]
 - 2) Lumpectomy
 - 3) Quadrantectomy
 - 4) Toilet Mastectomy
 - 5) Skin-Sparing/Keyhole Mastectomy [SSM]



5. BREAST CONSERVATIVE SURGERIES

1. *Wide Local Excision (WLE)/ Partial Mastectomy*

Removal of unicentric tumour with 1cm clearance margin.

Incision: Over tumour + Axillary Dissection + RT

2. *Quadrantectomy:*

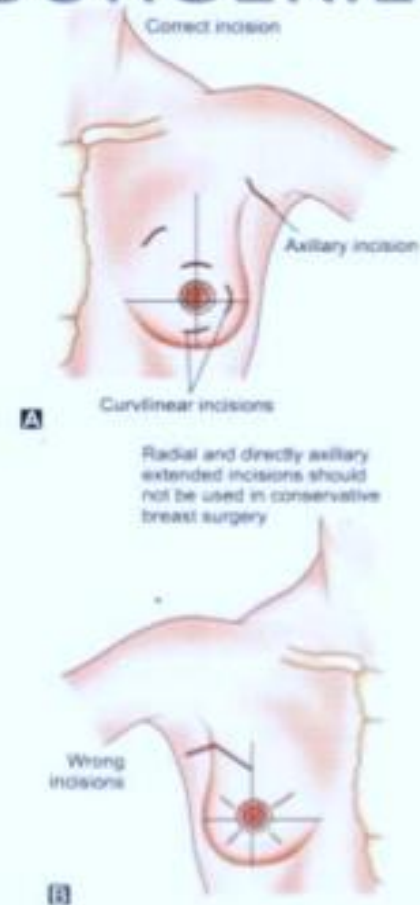
Removal of entire quadrant with ductal system with 2-3cm normal breast tissue clearance. Part of QUART Therapy (Quadrantectomy + Axillary dissection + RT)
Not advocated now.

3. *Skin Sparing Mastectomy*

4. *Lumpectomy (=WLE)*

Term rarely used

SR_Ca_Breast_Rx



Figs 8.84A and B: Curvilinear incision should be placed in conservative breast surgeries. Never place wrong radial incisions because if conversion to total mastectomy is needed then placement of incision will be difficult. In conservative breast surgery for axillary dissection separate incision in the axilla should be placed.



COMPLICATIONS of M.R.M/MASTECTOMY

- ❑ Injury/ Thrombosis of Axillary Vein
- ❑ Seroma
- ❑ Shoulder Dysfunction
- ❑ Pain and Numbness
- ❑ Flap Necrosis and infection
- ❑ Lymphoedema and its problems
- ❑ Axillary hyperaesthesia
- ❑ Winged Scapula



Table 1: Lifetime breast cancer risk

	Lifetime breast cancer risk	Median age of breast cancer onset (y)
General population	11%	61
<i>BRCA1</i>	65%	43
<i>BRCA2</i>	45%	41

BRCA5

42%

41

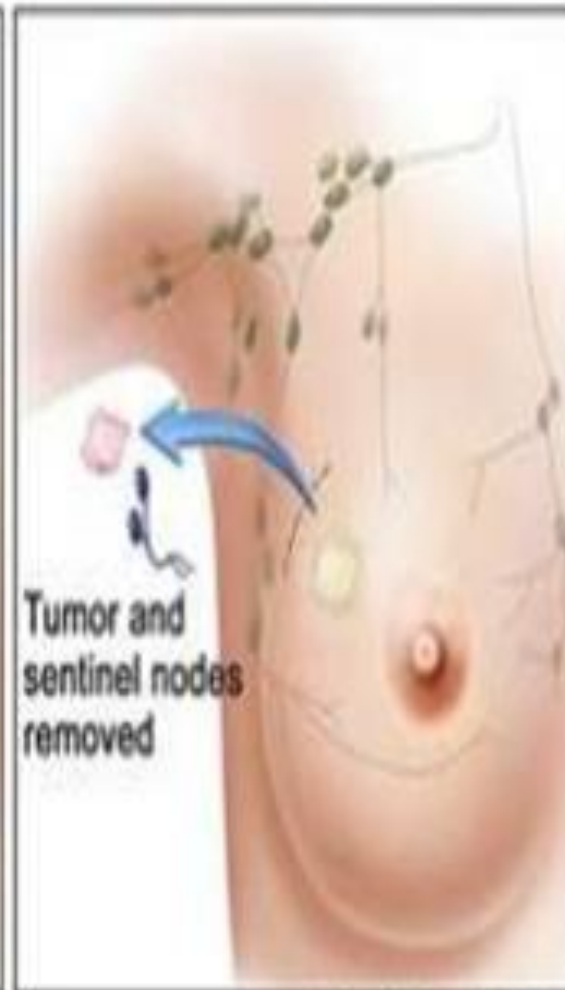
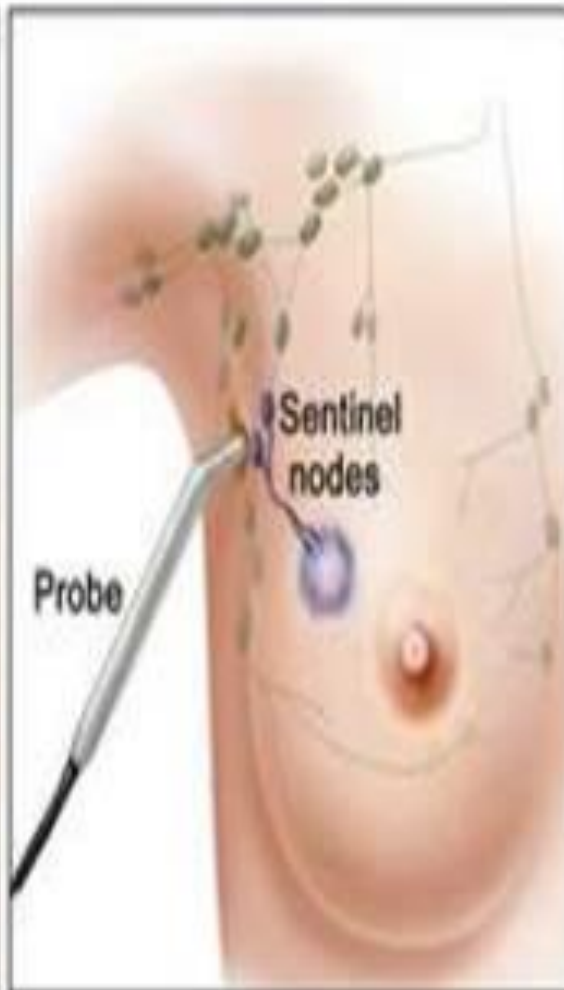
BRCA1

65%

43

LYMPH NODE SURGERY

- ❑ **Axillary lymph node dissection:** about 10 to 40 lymph nodes are removed.
- ❑ Usually done at the same time as the mastectomy or breast-conserving surgery.
- ❑ **Sentinel lymph node biopsy:** is used to determine if cancer has spread to the lymph nodes under the arm without removing many of them.
- ❑ A blue dye/radioactive substance is injected in order to identify the sentinel lymph nodes which drains lymph from the tumor.
- ❑ They are then removed.



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II. RADIOTHERAPY Approach

❖ Indications;

1. Conservative Breast Surgery adjuvant [Breast]
2. Total Mastectomy [Axilla]
3. High-risk of relapse patients
 - 1) Invasive Carcinoma
 - 2) Extensive in-situ Carcinoma
 - 3) Age < 35 years
 - 4) Multifocal disease
4. Bone secondaries [Palliative]
5. Atrophic Schirrous Carcinoma [Curative]
6. Pre-Operatively (reduce tumour size and downstage)
7. >4 +ve Axillary LN, Pectoral fascia involvement, positive surgical margins, Extra-nodal spread



Any Questions?

