

# L5-Breast Diseases



Surgery Team  
MED 433



# Objectives :

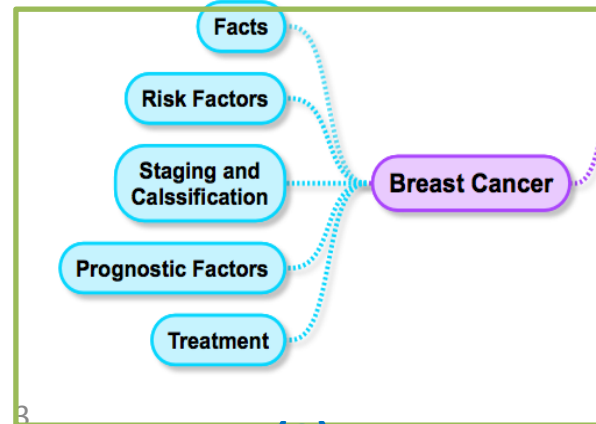
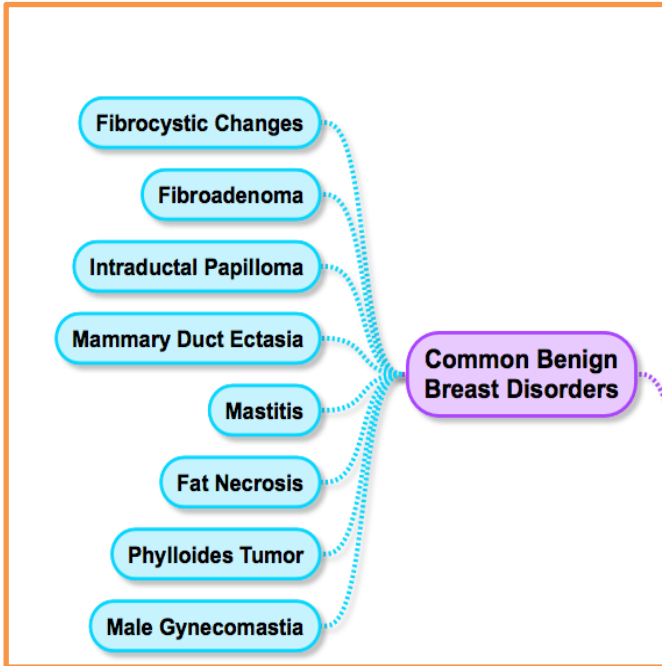
[Color Index](#): Slides & Raslan  ) | [Doctor's Notes](#) | Extra Explanation | [Additional](#)

**This work is based on doctor's Slides +Notes and Raslan's only (Does not include the book)**

# Mind Map

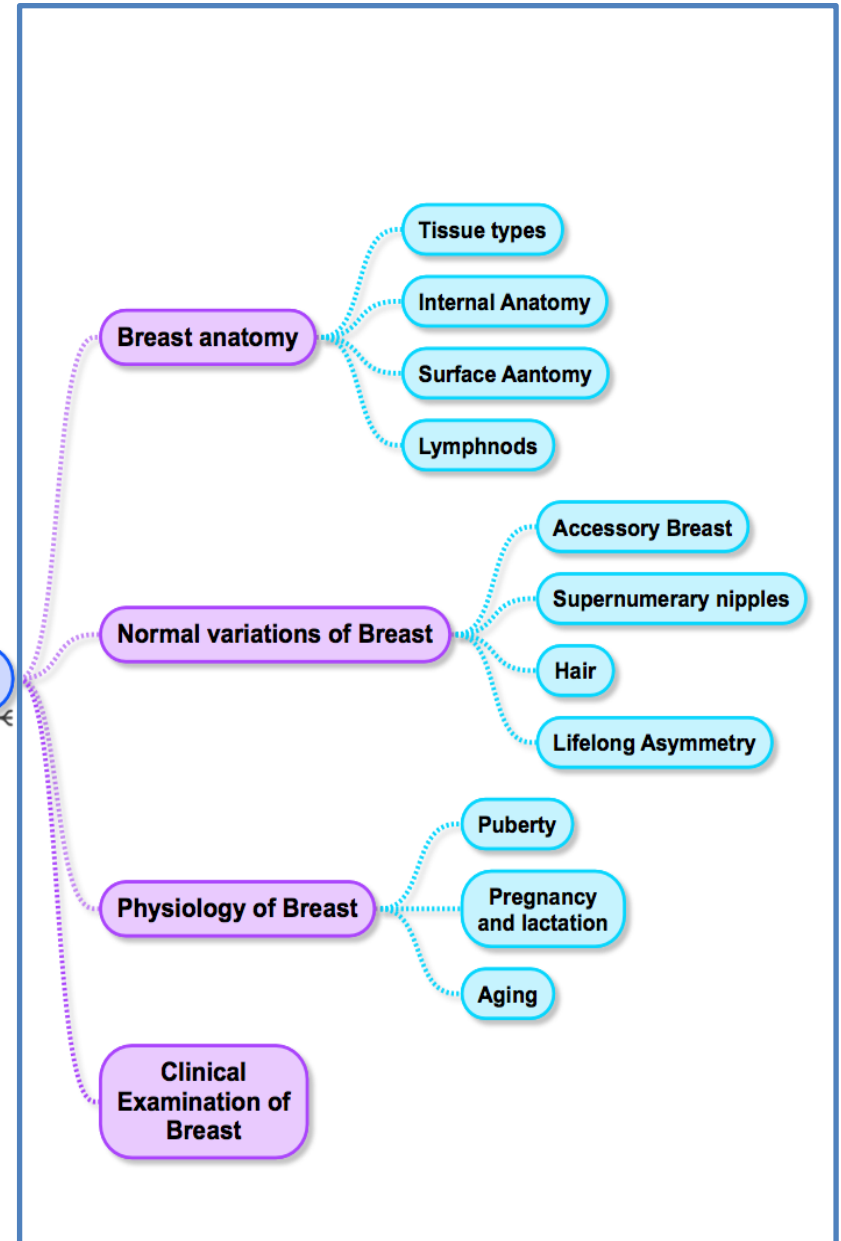
part (1)

part (2)



part (3)

## Breast Diseases



# part (1)

## Anatomy of the Breast



Breasts (mammary glands) are modified sebaceous glands.

The breast extends from the **2nd to the 6th ribs** and transversely from the **lateral border of the sternum to the mid-axillary line**

### Breast Borders:

1. **Upper border:** collar bone
2. **Lower border:** 6th or 7th rib.
3. **Inner border:** edge of sternum.
4. **Outer border:** mid-axillary line

**Breast :Divisions** Each breast is divided into 5 segments.(Four quadrants & Tail of Spence )

### A)Four quadrants:

By horizontal and vertical lines intersecting at the nipple

(upper outer quadrant, upper inner quadrant, lower outer quadrant, and lower inner quadrant)

Majority of benign or malignant tumors lie in the **upper outer quadrant**

### B)Tail of Spence

(the axillary tail): an additional lateral extension of the breast tissue toward the axilla.

Breast Parts



More details in the next slide

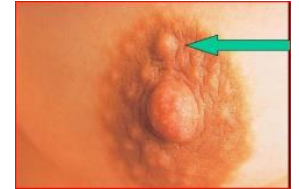
External Anatomy  
Of The Breast

Musculature Related  
To The Breast

Internal Anatomy  
Of The Breast

## A) External Anatomy Of The Breast:

1. **Nipple:** pigmented and cylindrical, lies at the **4th intercostal space** (at age 18)
2. **Areola:** pigmented area surrounding the nipple.
3. **Glands of Montgomery** (Montgomery's Tubercles): sebaceous glands within the areola, which act to lubricate the nipple during lactation



## B) Musculature Related To The Breast:

The breast lies over the muscles that encases the chest wall.

The muscles involved include the

- pectoralis major (60%),
- pectoralis minor, serratus anterior (30%)
- external oblique, latissimus dorsi, subscapularis, and rectus abdominis fascia (10%).

### Nerve supply

#### Long Thoracic Nerve

- Serratus anterior

#### Thoracodorsal Nerve

- Latissimus Dorsi

#### Intercostalbrachial Nerve

- Lateral cutaneous
- Sensory to medial arm & axilla

Absence of the breast, also called amastia. Unilateral amastia (amastia just on one side) is often associated with absence of the pectoral muscles (the muscles of the front of the chest)



## C) Internal Anatomy Of The Breast:

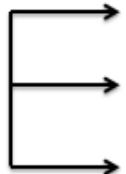
The breast is composed of 3 different types of tissue:

**1. Glandular tissue:** It is the milk-producing tissue. Each mammary gland consists of **15-20 lobes**. Each lobe is further divided into **20-40 lobules** composed of clusters of milk-secreting glands (alveoli/acini) and is drained by a lactiferous duct that opens onto the nipple.

**2. Fibrous** (supporting) tissue: Strands of connective tissue called the suspensory ligaments of the breast (**Cooper's ligaments**) extend through the breast to the underlying muscle separating the breast's lobes .

**Benign or malignant lesions may affect these ligaments and cause (Skin retraction or dimpling)**

any pathology that lead to blockage of the local lymphatic ducts causes →swelling of the breast →lead to cooper's ligaments becoming tight causing → **Peau d'orange appearance**

**dimpling may happen**  **after surgery**  
**because of malignancy**  
**because of infections**

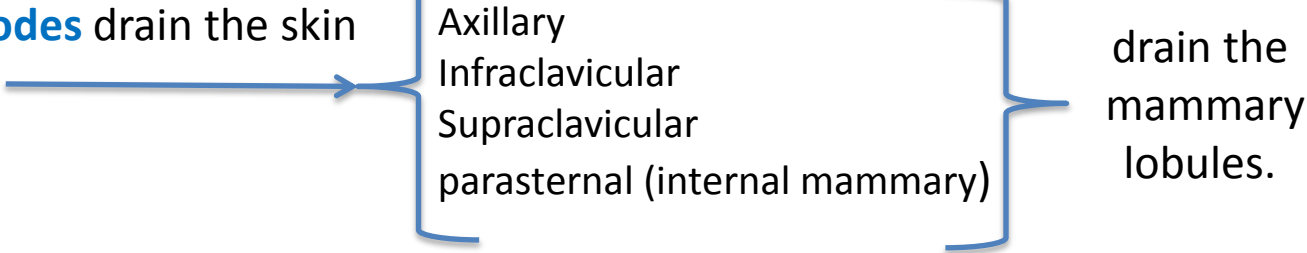
but remember infections are associated with fever ,redness and tenderness

**3. Fatty tissue:** Subcutaneous and retromammary fat.

It gives the bulk of breast. **There is No fat beneath areola and nipple.**



# Lymphatic Drainage Of The Breast:

- **Superficial lymphatic nodes** drain the skin
- **deep lymphatic nodes** → 

## Lymphatic drainage of the breast

The **medial** portion of the breast → to the **internal mammary** nodes

The **central** and **lateral** portions 75-80% → drain to the **axillary lymph nodes**

Axillary lymph nodes can be classified **Anatomically into 5 groups** and **clinically into 3 levels**

### **Anatomical classification of axillary lymph nodes:**

 in the next slide

1. Anterior (pectoral) group: deep to pectoralis major.
2. Posterior (subscapular) group: along subscapular vessels.
3. Lateral group: along the axillary vein.
4. Central group: within the axillary pad of fat.
5. Apical group: which drains all of the other groups, lies behind the clavicle at the apex of axilla.



**very important**

## Clinical/surgical classification of axillary lymph nodes:

This surgical classification is used in axillary dissection.

It is based on the relationship of the lymph nodes to **pectoralis minor**.

**There are 3 levels of axillary lymph nodes and options for dissection:**

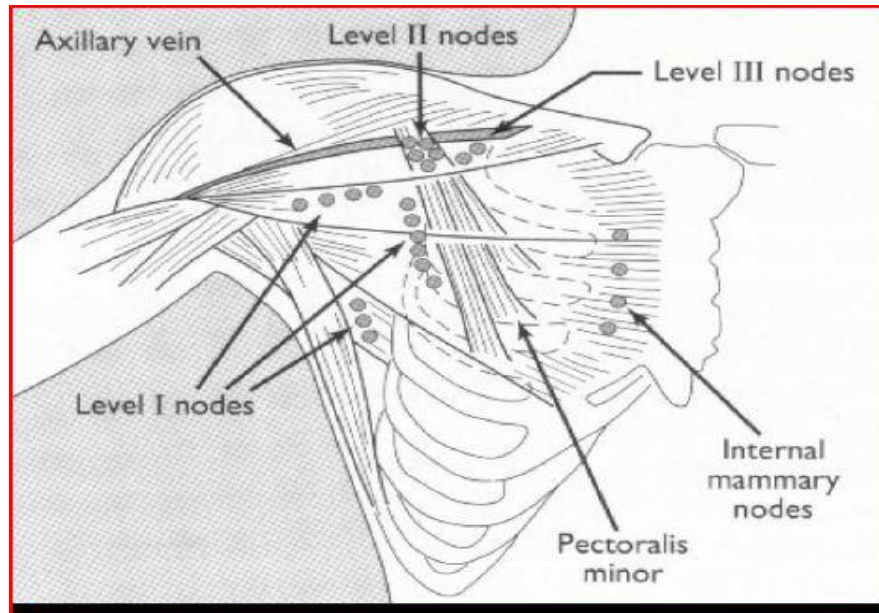
**Level 1:** any lymph node (**lateral**)= **below** pectoralis minor

**Level 2:** any lymph node (**posterior**) =**behind** pectoralis minor.

**Level 3:** any lymph node (**medial**) =**above** pectoralis minor

**first group involved in malignancy)**  
account for 80% of lymph nodes.

Lymphatic channels are drained according to the blood supply that's why some tumors metastasize to the ribs and lungs





# Physiology Of The Breast

## Normal physiological breast changes in females.

**Puberty:** need estrogen and progesterone

**Estrogen**→ growth and appearance, milk-producing system.

**Progesterone**→ lobes & alveoli, alveolar cells become secretory

**Asymmetry is common**

### **Menses:**

- o Progesterone: 3-7 days prior to menses, engorgement.
- o Physiologic nodularity: retained fluid.
- o Mastalgia= Breast pain

### **Pregnancy and lactation:**

- o Glandular tissue displaces connective tissue.
- o Increases in size.
- o Nipples prominent and darker.
- o Mammary vascularization increases.
- o Colostrum present.
- o Attain Tanner stage V with birth.

### **Aging:**

- o **Perimenopause:** decrease in glandular tissue, loss of lobular and alveolar tissue.
- o Fatten, elongate, pendulous.
- o Infra-mammary ridge thickens.
- o Suspensory ligaments relax.
- o Nipples flatten.
- o Tissue feels “grainy”.

# Normal Variations of Breast

## 1- Accessory breast tissue

- Commonly occurs in three stages: puberty, pregnancy or lactation.
- Accessory breast is not well formed, there is no full duct or secretion or nipple only accumulation of breast tissue.
- The patient is normal and a swelling occurs, it is due to increased glandular tissue in the axilla which increases in size due to the effect of hormones.
- Treatment: nothing is done only reassurance.

## 2- Supernumerary nipples

Two deformity can occur in the nipple:

**Retracted** and **deviated** nipple presents in:

malignancy, inflammatory process, duct ectasia, or congenital

Accessory Nipples appear at birth as congenital abnormality.

if we are not sure which nipple is the accessory one we should do an ultrasound or a ductogram to see the duct connections to the nipple.

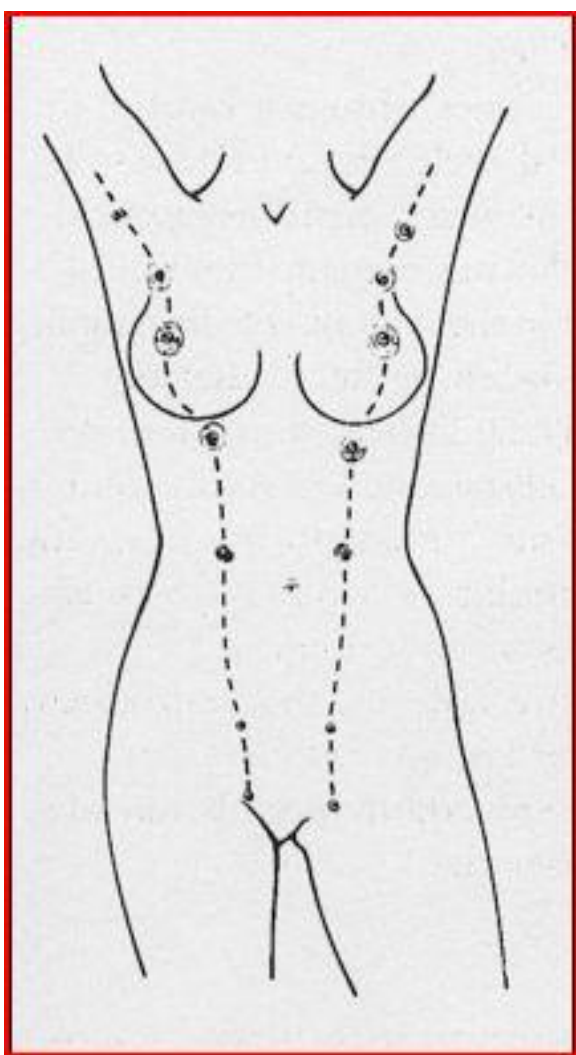
## 3-Hair.

## 4-Asymmetry

is a common concern among female adolescents. Typically, the asymmetry is more noticeable during puberty and eventually breast size evens out during development. If it was a major and persistent asymmetry a breast augmentation or reduction surgical procedure may be considered AFTER breast development/puberty is complete (NEVER interfere surgically during puberty).

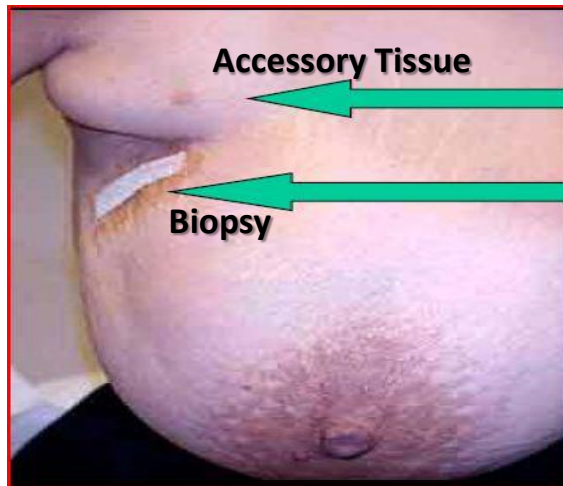
but you should do an ultrasound to make sure there is no underlying pathology especially in elderly.

# Normal Variations of Breast



Milk Lines

(Sites of Accessory Nipples and Breasts)



Accessory Tissue

Biopsy

Accessory breast tissue



Supernumerary nipple



Breast Hair



Breast asymmetry

Accessory Nipples and Breasts NEVER crosses below the umbilicus

## Clinical Approach

1. History
2. Clinical examination
3. Imaging
4. Cytology and tissue diagnosis

### Management of a patient with a breast lump:

1. History and examination
2. Ultrasound and mammogram if above 35 years old.
3. FNAC or core biopsy or excision biopsy

### Definitive treatment which is either:

Observation, Excision, if malignant, along the lines of cancer cases

## Spectrum of complaints:

### Women came to see a breast surgeons for the following reasons:

1. Breast lump (painful/painless) - 60%
2. Anxiety - 20%
3. Breast pain without a lump - 10%
4. Nipple discharge - 5%
5. Change in breast contour - 2%
6. Nipple-areolar complex disorder - 1%
7. Axillary mass - 1%
8. Screen detected lesion



### Triple assessment of a patient with a lump:

1. History and examination
2. Mammogram (99%) if above 35 years old
3. F.N.A

For history and Clinical examination you can go back to Raslan's (page 335) and read more about it

# Breast presentation:

## ●Skin dimpling:

carcinoma, aging, breast infection, previous breast surgery

## ●Changes in nipple/areola:

Duct ectasia, carcinoma, paget's disease, eczema

## ●Painless lump:

carcinoma, cyst, fibroadenoma, fibroadenosis

## ●Painful lump:

cyst, periductal mastitis, abscess, sometimes carcinoma

## ●Pain and tenderness (no lump):

cyclical, noncyclical, very rarely a carcinoma

## The cardinal signs of a late cancer of the breast:

- hard
- non-tender
- irregular lump
- tethering or fixation
- palpable axillary lymph nodes





# Imaging

- Mammography
- Ultrasonography

## When to image?

- Investigation of a palpable lump or nipple discharge.
- Screening in appropriate groups (asymptomatic **40 y/o**)
- Metastatic adenocarcinoma with an unknown primary

### Mammography

- ❖ Estimated reduction in mortality 15 – 25%
- ❖ 10% false positive rate
- ❖ Densities and calcification

## 1-Mammography

### Diagnostic mammography

performed in order to evaluate a breast complaint or abnormality detected by clinical examination.

### Screening mammography

performed for asymptomatic well women to detect unsuspected lesions.  
E.g. routine screening for women who are 40 years or older

## Cardinal Mammographic Features Of Malignancy

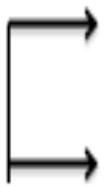
- Speculated mass (stellate lesions)** → check for the presence of a surgical scar. All other stellates are presumed invasive carcinoma that requires work up and biopsy. If unexplained, don't be seduced by stability.
- Architectural distortion without mass** → should be treated as stellate lesion.
- MICRO-calcifications with casting or irregularity** → 60% of localization biopsies are for calcifications, but only 25% of these yield malignancy.
- Distribution** (casting, linear, segmental, clustered) → segmental and clustered indicate malignancy.
- Morphology** (pleomorphism).
- Relationship to parenchyma.**
- Circumscribed density with distinct margins.**
- Asymmetric density**

# Benign Vs. Malignant Imaging Characteristics In Breast Cancer:

Benign	Malignant
Circumscribed mass	Spiculated mass
Fat-containing lesion	Architectural distortion with no history of prior surgery
Microcalcifications	Microcalcifications
Round, uniform density, large, coarse	Linear, branching, pleomorphic, casting
Widely scattered	Tightly clustered
Long axis of the lesion is along the normal tissue planes	Lesion is taller than it is wide
Homogeneous internal echotexture	Decreased hyperechogenicity
Hyperechogenicity	Marked acoustical shadowing
Smoothly margined	Spiculation

## Benign Vs. Malignant calcification :

Based on size



**Macrocalcification.**(Large white dots) are always benign and require no further follow-up.

**Microcalcification.**(Very fine white specks) mostly benign but can be malignant.



Based on shape

→ Benign → punctate, linear, spherical, popcorn, vascular, smoothly dense.  
 → Malignant → mostly ductal, segmental and clustered.

Based on distribution

→ widespread bilateral distribution is suggestive of a benign process

## 2-Ultrasonography (Ultrasonographic Features )

for extra information about US  
go back to Raslan's (page 357-358)

### Cysts:

- Contain no or few echoes
- Have smooth margins
- Often compressible with ID
- Have posterior enhancement (increased echoes=whiter)



**Fibrocystic changes**



- ❖ **Cysts can present as a palpable mass or a focal tender area within the breast**
- ❖ **A majority of cysts are found in asymptomatic women on their screening mammogram.**
- ❖ **On mammography:** they appear as a mass and may have associated benign rim/eggshell calcifications.
- ❖ **On ultrasound:** it is the confirmatory diagnostic test, demonstrates a well-defined mass devoid of internal echotexture (if any internal echoes are present, U/S guided FNA is recommended to fully exclude malignancy)

### Benign masses:

- Have smooth margins
- Have relatively uniform internal appearance
- Don't disturb surrounding tissues o Are usually wider than tall

### Malignant masses:

- Have **irregular or indistinct** margins
- Have heterogeneous internal appearance
- Often cut across surrounding tissue planes
- Are often taller than wide or rounded (special types)
- The normal breast tissue appear as symmetrical waves under U/S. Malignant lesions disturb that pattern but benign lesions follow that pattern.

# 1-Mammography

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

# 2-Ultrasonography

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

# 3-MRI

## •High risk patients

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

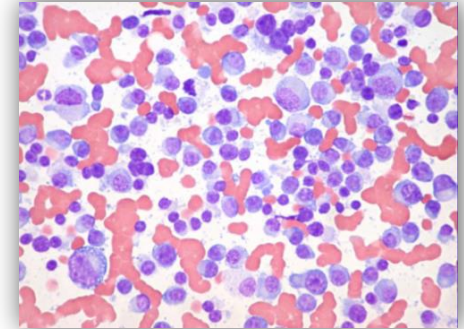
## High sensitivity

- 10 – 20% will have a biopsy

# Cytology and Biopsy

## ❖ Fine-needle aspiration (cytology)

- Procedure description: a thin needle is inserted into the mass for **sampling of cells** that are later on examined under a microscope.
- Fast, inexpensive
- 96% accuracy
- Institution dependent
- Unable to differentiate between in-situ vs CA



## ❖ Core biopsy → core and excisional biopsy **give tissue**

### ➤ Image guided

### ➤ Stereotactic

- Suspicious mammographic abnormalities
- Patients lay prone
- Biopsy under mammogram

## ❖ Excisional Biopsy

### ❖ Atypical lesions

### ❖ LCIS

### ❖ Radial scar

### ❖ Atypical papillary lesions

### ❖ Radiologic-pathologic discordance

### ❖ Phyllodes

### ❖ Inadequate tissue harvesting



# Nipple discharge

- 5% of women coming to the clinic complain of nipple discharge
- 95% of these complaints are benign.

## Commonest causes in non-pregnant women:

- Carcinoma
- Intra-ductal papilloma (most common cause) *most common cause of nipple discharge is lactation, most common pathological cause is intra-ductal papilloma (bloody nipple discharge)*
- Fibrocystic changes
- Duct ectasia
- Hypothyroid
- Pituitary adenoma (prolactin secreting adenoma, can present with galactorrhea)

## Clinical characteristics:

**1- Physiologic discharge** (e.g. lactation) → usually bilateral, multiple ducts, non-spontaneous, screen for phenothiazine use (antipsychotic)

**2- Pathologic discharge:** → Unilateral, spontaneous (without squeezing the nipple), single duct, discolored discharge

## Clinical Evaluation

### -Most important points in history of nipple discharge are:

- ✓ Is it spontaneous or on pressure? Is it coming from single or multiple?
- ✓ Colors: Serous, serosanguinous, bloody, clear, milky, green, blue-black.

- **R/O mass by clinical examination and mammogram.**

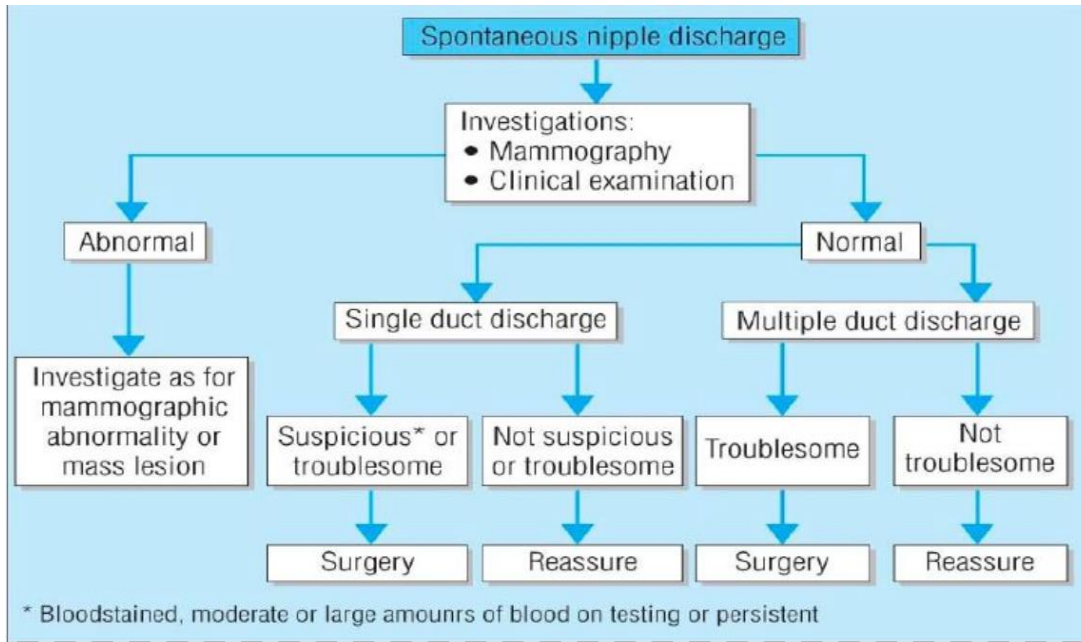
- **Identify source of discharge and test for presence of blood in discharge**

- **Consider ductography**

- **Cytology and biopsy: core biopsy**

- **Lab tests: thyroid, prolactin**

# Nipple discharge



For further evaluation of spontaneous nipple discharge a ductography can be performed. Ductography is useful in detecting the location of the lesion within the duct and the extent of involvement. This information can be extremely helpful in presurgical planning.

## Galactocele:

**Def.:** Cyst containing milk.

**clinical presentation:** dull aching pain with a well formed lump

**Diagnosis:** clinically or U/S

**Management:** aspiration both therapeutic and diagnostic under full aseptic technique to prevent infection. If it appeared small on U/S there's no need to aspirate just reassure the patient.

If it accumulates again then aspirate again while reassuring the patient that it'll resolve after lactation period

## Management of Nipple discharge

### Physiologic

- o Treat cause if present
- o Follow-up 6 months (observation)

### Pathologic

- o Biopsy and excise  
(single duct excision or total duct excision)

## Common Benign Breast Disorders

1. Fibrocystic changes
2. Fibroadenoma '
3. Intraductal papilloma
4. Mammary duct ectasia
5. Mastitis
6. Fat necrosis
7. Phylloides tumor
8. Male gynecomastia
9. Galactocele

# 1. Fibrocystic changes

## ❖ Characteristics:

- Most common breast pathology (No increased risk for cancer) “
- Lumpy, bumpy breasts
- 50-80% of all menstruating women
- Commonest incidence among age 30-50 (10% in women less than 21 )
- Caused by hormonal changes prior to menses
- Relationship to breast cancer doubtful.
- It may also present with pain, which may be cyclical

## Three Morphologic Patterns seen in Fibrocystic Changes :

- Cysts formation and apocrine metaplasia
- Fibrosis of tissue
- proliferation of glands( Adenosis)Increase in the number of acini per lobule.  
(Adenosis can be seen in pregnancy.)

## ❖ Signs And Symptoms

- Mobile cysts with well-defined margins
- Singular or multiple
- May be symmetrical
- Upper outer quadrant or lower breast border
- Pain, discomfort and tenderness
- Cysts may appear quickly and decrease in size
- Lasts half of a menstrual cycle
- Subside after menopause, if no HRT.



### Histology

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

# Fibrocystic Changes – Cont

## ❖ Investigations

### Aspirate cyst fluid

- o If bloody → go for surgical biopsy.
- o If non-bloody and disappear completely → observe.
- o If non-bloody and doesn't resolve → surgical biopsy.

### Imaging for questionable cysts

- o In young patients only U/S is performed show multiple cysts
- o In 40 and above patients both U/S and mammogram are performed to exclude any underlying malignant pathologies.

## ❖ Management

- o **Treatment based on symptoms**
- o **Reassure patient**
- o **“Atypical Hyperplasia → for more details about the management (go to the next slide)**
- o **Comfort measures**
  - ✓ Eliminate Methylxantines (coffee, chocolate): may take 6 months for relief.
  - ✓ Local heat/cold
  - ✓ Wear a good supporting bra
  - ✓ Low-Sodium diet
  - ✓ Vitamin E: Antioxidant but do not take more than 1200/day
- o **Medications for mastalgia: (Breast pain)**
  - ✓ NSAIDS (simple analgesia)
  - ✓ Monophasic oral contraceptive pills (to stabilize hormonal levels)
  - ✓ Spironolactone
  - ✓ Dopamine Agonists: Bromocriptine
  - ✓ Rare or former use: Danazol (for severe cases, side effects include: acne and hirsutism, only 50% respond to it, mostly not used), Tamoxifen, GnRH agonist (Luprolide)



# Fibrocystic Changes – Cont

“**Atypical Hyperplasia**” on pathology report indicates **increased risk of breast cancer** → **must excise**

- **If simple (one layer of cells and fluid)** → then just reassure the patient & conservative management
- **Atypia or hyperplasia if atypia / hyperplasia / dysplasia changes** were present → **must EXCISE**
- **Complicated cyst** (i.e. both solid and cystic components) → Biopsy is needed from solid component to exclude malignancy (has malignancy potential).
- **Constant cyst** (i.e. doesn't change with multiple imaging in different times) → **must biopsy**

## Breast Pain In General

**1-Cyclical pain – hormonal:** this type is assuring . Secondary to hormonal influence.

Dull, diffuse and bilateral

Luteal phase

Treatment: Reassurance, NSAIDS, evening primrose oil

**2. Non-cyclical pain:**

Non-breast vs breast

Imaging

Treatment: Reassurance, NSAIDS, evening primrose oil

# 2. Fibroadenoma

## ❖ Characteristics

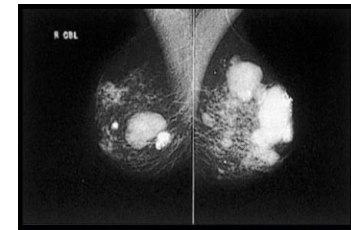
- Second most common breast condition (most common lump)
- **Well circumscribed mass**
- Most common in black women
- Late teens to early adulthood (**15-30 years old of age**) young age group
- Rare after menopause
- Totally benign, and **NO** malignancy potential

## ❖ Signs And Symptoms

- Firm, rubbery, round, **mobile mass**
- **Painless, non-tender**
- Solitary, 15-20% are multiple
- Well circumscribed
- **Mostly located in upper-outer quadrant of the breast**
- 1-5 cm or larger (**if more than 5 cm it is called a giant fibroadenoma**)

## ❖ Investigations And Treatment

- Triple assessment
- Imaging: U/S mostly used because its more common in young and mammogram
  - **Popcorn microcalcification in mammogram**
- Biopsy
- Excision and close follow-up



## Fibroadenoma: To leave alone or to excise?

### EXCISE if

- >3-4 cm or giant fibroadenoma = more than 5 cm
- localized
- painful
- rapidly growing
- a family history of malignancy (does NOT mean that fibroadenoma is pre-malignant but done only to relieve the patient's worries)
- patient's preference
- Patient has no access for medical follow up
- indeterminate diagnosis(unclear pathology)
- if 35 y/o and older recommended (unusual age)

### If left alone

it'll either remain the same or regress (some patients during pregnancy it regresses) or increase in size or calcify

### Important Note

we should make clear diagnosis from the beginning and we must differentiate it from Phyllodes tumor because the Phyllodes tumors has the potential to transform into malignancy.



# 3. Intraductal papilloma

## ❖ Characteristics

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

## ❖ Signs And Symptoms

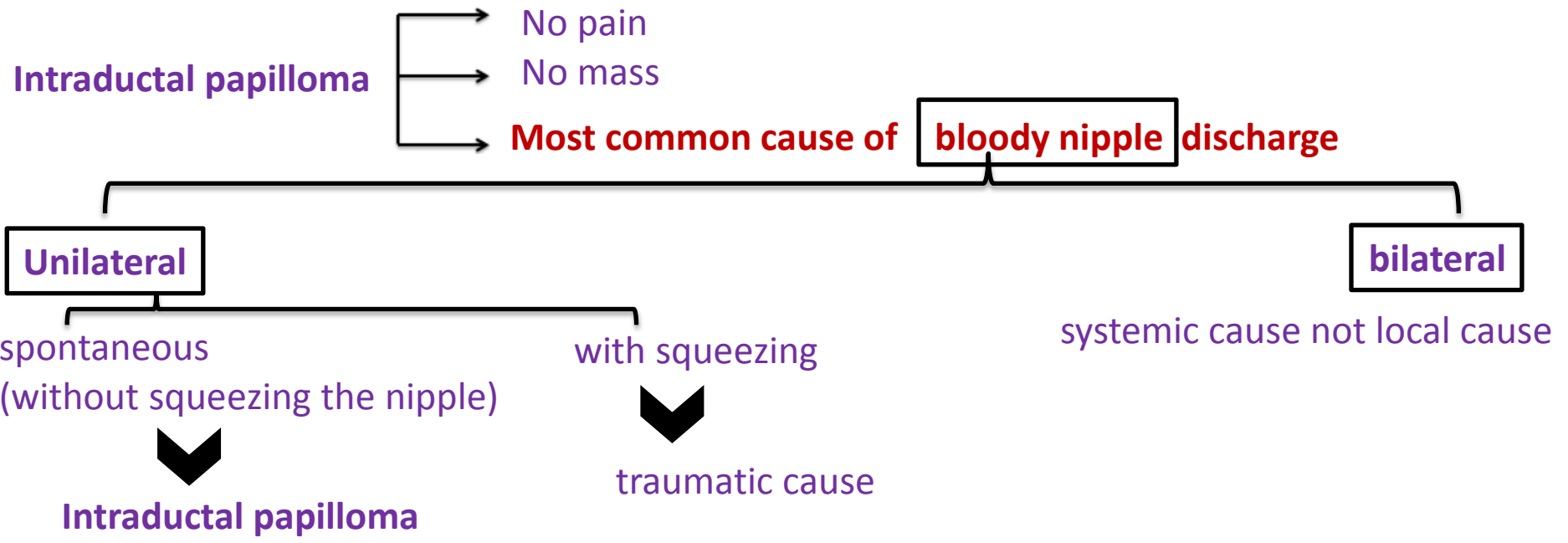
- Watery, serous, serosanguinous, or bloody discharge
- Spontaneous discharge (**Without squeezing the nipple!**)
- Usually unilateral
- Often from single duct → pressure elicits discharge from single duct 50% no mass palpated

## ❖ Investigations

- **Test for occult blood**
- **Ductogram**

Breast ducts is 2-3 cm and the growth is in the duct so it won't be felt or be visible.

- On ultrasound and mammogram it will show normal breast tissue
- A ductogram is done which is a contrast material injected then an x-ray is taken (mammogram) and filling defects are assessed
- **Biopsy**



❖ **Treatment (Papilloma: To leave or to excise? )**

○ **Excision of involved duct**

- **If single papilloma** → can observe and see if it disappears
- **If it doesn't resolve** → excise
- **If presented with intraductal PAPHAMATOSIS** (appears as multiple filling defects on ductogram) → considered a pre-malignant condition → **must excise**

- **Exclude malignancy**
  - In young by US or ductogram (filling defect),
  - if 40 and above by U/S, ductogram and mammogram

## 4. Mammary duct ectasia dilatation of breast ducts

### ❖ Characteristics

- Inflammation and dilation of sub-areolar ducts behind nipples, **completely benign**
- May result in palpable mass because of ductal rupture
- **Greatest incidence after menopause**
- Etiology Unclear → Ducts become distended with cellular debris causing obstruction
- Predispose to periductal abscess or predictable mastitis diagnosed by ultrasound.

### ❖ Signs and symptoms

- Multi-colored discharge →
  - ❖ Thick, pasty( like toothpaste)
  - ❖ White, green, greenish-brown or serosanguinousIntermittent, no pattern
- Bilaterally from multiple ducts
- Nipple itching with drawing or pulling (burning) sensation

### ❖ Mammary Duct Ectasia versus Breast Cancer:

- **Left breast (1)**– slit-like nipple characteristic of mammary duct ectasia
- **Right breast (2)**– nipple retraction from carcinoma



(1)



(2)

## ❖ The problems behind this condition:

### 1- Infection

Duct ectasia → stasis → risk of infection → higher chance of abscess (periductal mastitis) caused by mixed organisms → broad spectrum antibiotics and abscess drainage  
(nonlactating breast abscess or mastitis) → think of underlying duct ectasia)

### 2-Similar presentation to malignancy:

Inflammation → can retract nipple → patient is worried about malignancy → U/S and mammogram according to age → reassure the patient, if 40 and above take aspiration for cytology



Dried Secretions from  
Mammary Duct Ectasia



Yellow Breast Discharge Duct Ectasia



Multi-colored Breast Discharge

## ❖ Investigations And Treatment

### Test for occult blood

**Imaging** → Mammogram and sonogram

**Biopsy** → Excision of ducts if mass present

**Antibiotics**

**Close follow-up**



# 5.Mastitis

## ❖ Characteristics:

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

Lactating mothers are exposed to staph infection if they have cracked nipples or if the baby's mouth is colonized by staph (mothers are instructed to clean areola and babies mouth before feeding)

## ❖ Signs And Symptoms

- Pain and tenderness
- Nipple discharge: -(Pus -Serum -Blood )
- Localized induration
- Fever and rigor
- Abscess: localized tenderness, severe fever and rigor
- Similar to cellulites .

## ❖ Treatment

### •Antibiotics

- ✓ Oxacillins → for PP mastitis(PP=postpartum=after childbirth)
- ✓ Cephalosporin for other abscesses → cephalexin, Keflex

### •Empty breast if PP

### •Incision and drainage of abscess

## ❖ Inflammatory carcinoma vs. mastitis

May have similar appearance, but completely different history

- **Inflammatory carcinoma** → non-lactating, nonfebrile, not as tender as mastitis elderly, peau d'orange, must perform U/S, mammogram and biopsy.
- **Mastitis** → Lactating women presented with fever, painful and tender breasts

## ❖ Can a lactating female with abscess still breast feed her newborn?

YES, except if her baby appeared to be sensitive to antibiotic administered



## ❖ Note

Lactating women presented with fever, painful and tender breasts → most likely mastitis → broad-spectrum antibiotics (**cephalosporin 1st generation IV**), warm sponges, if abscess must drain it.



**Puerperal Mastitis  
Left Breast**



**Puerperal Mastitis**



**Inflammatory Carcinoma  
Erythema and peau d'orange**

# 6.Fat necrosis

## ❖ Cause:

- **Trauma** to breast (e.g. seat belt trauma in car accidents)
- Surgery
- Necrosis of adipose tissue



Seat Belt Trauma



Breast Hematoma

## ❖ Signs And Symptoms

- Pain or mass (Usually non-mobile mass)

## ❖ Treatment: no treatment

- Resolves over time without treatment
- may be excised

## ❖ Carcinoma vs. fat necrosis:

fat necrosis is important because both clinically and radiologically can appear very similar to malignancy. In order to exclude cancer a biopsy should be performed.

- Patient presents with an irregular lump attached to the skin and doesn't remember any trauma.
- Upon clinical and radiological examination you can't differentiate it from malignancy, on ultrasound and mammogram speculation and calcification similar to malignancy .
- We differentiate between it and malignancy by **core biopsy**

# 7. Phylloides tumor (cystosarcoma)

## ❖ Characteristics:

- Giant fibroadenoma (a variant of fibroadenoma) with rapid growth (patient presents with a history of a rapidly growing mass)
- Malignant potential, lesions **> 3 cm** are more likely to be malignant
- Most are benign, 25% recur locally if incompletely excised
- The malignant form of this lesion mostly locally malignant (about 10%) can metastasize **hematogenously** to the lungs and not to the axillary lymph nodes.
- Often occurs in women aged 40+

## ❖ Investigations:

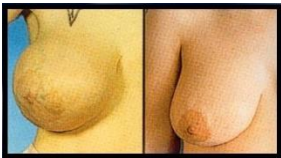
Imaging: both mammography and ultrasound, they present as well-defined masses that are very **similar to a benign fibroadenoma**.

The malignant forms are more likely to have **cystic spaces on U/S**

## ❖ Treatment:

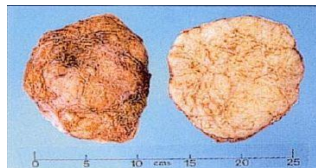
**Excision (mastectomy) is the only treatment!**

Chemotherapy and radiotherapy are not effective.

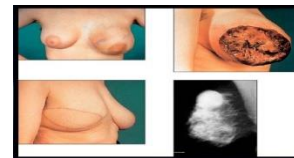


Before Surgery After Surgery

Giant Fibroadenoma



Cross Section of Giant Fibroadenoma



Malignant Phylloides Tumor

# 8. Male Gynecomastia

## ❖ Characteristics

- Diffuse hypertrophy of breast
- 30-40% of male population
- Adolescence and older men
- Caused by imbalance of estrogen/testosterone
- Medical conditions (**hepatitis, COPD, hyperthyroidism, TB**)
- May be associated with genetic cancer families
- Must exclude **testicular and adrenal malignancies** (hormone producing tumors)



## ❖ Medications associated with gynecomastia:

- o Marijuana
- o Narcotics
- o Phenothiazines
- o Diazepam
- o Anything that affects the CNS

## ❖ Treatment

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



## Breast Cancer (for reading )



### Facts about it:

- Killer of women
- USA 1:8
- KSA? 1:15
- 187000 cases of cancer breast in one year (USA)
- 45000 deaths due to it in one year (USA)
- Breast cancer is the most common cause of death from cancer in western women
- Every day in Australia, over 30 women discover they have breast cancer
- In Australia 11,400 people (11,314 women and 86 men) were diagnosed with breast cancer in 2000.
- 9 out of 10 women who get breast cancer do not have a family history of the disease
- Age is the biggest risk factor in developing breast cancer – over 70% of cases occur in women over 50 years
- Women aged 50–69 who have a breast screen every two years can reduce their chance of dying from breast cancer by at least 30%
- Women aged 50–69 who have a breast screen every two years can reduce their chance of dying from breast cancer by at least 30%
- The average age of diagnosis of breast cancer in women is 45 - 55 years
- During the period 1994 to 1998, the five year survival rate for women diagnosed with breast cancer was 85 %
- Although we know of many factors that contribute to the risk of women getting breast cancer, the cause remains unknown
- **Most common type of breast cancer is ductal carcinoma.**
- **Five year survival rates**

Stage at diagnosis	Survival rates (%)
Localized	96.8
Regional	75.9
Distant	20.6

# Breast Cancer

## Established risk factors for breast cancer in women

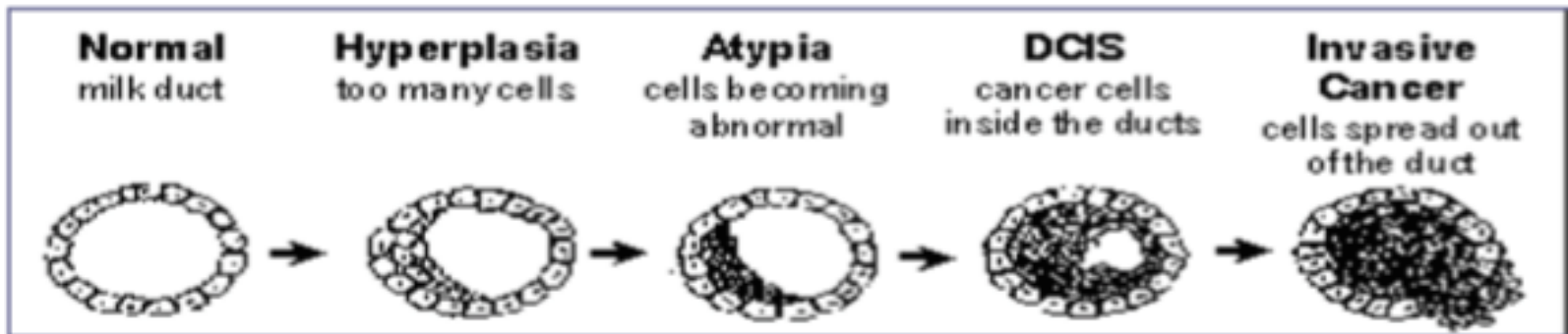
<b>Relative risk &lt;4</b>	<ul style="list-style-type: none"><li>• <b>Age</b> (older age group higher risk)</li><li>• Country of birth (North America, Northern Europe)</li><li>• Mother and sister with <b>history of breast cancer</b>, especially at an early age</li><li>• Biopsy confirmed atypical hyperplasia and a history of breast cancer in a first degree relative</li></ul>
<b>Relative risk 2.1</b>	<ul style="list-style-type: none"><li>• Nodular densities on mammogram occupying &gt;75% of breast volume</li><li>• History of cancer in one breast</li><li>• Radiation to chest</li><li>• Mother or sister with history of breast cancer, diagnosed at an early age</li><li>• Biopsy-confirmed atypical hyperplasia without a family history of breast cancer</li></ul>
<b>Relative risk 1.1</b>	<ul style="list-style-type: none"><li>• Socioeconomic status (high)</li><li>• Place of residence (Urban)</li><li>• Race/ethnicity (White &gt;45 and Black &lt;45)</li><li>• Religion (Jewish)</li><li>• Nulliparity, breast cancer &gt;40 years of age</li><li>• Age at first full-term pregnancy, age at menarche, age at menopause</li><li>• History of primary cancer in endometrium, ovary</li><li>• Obesity (Obese breast cancer &gt; 50 years, Thin breast cancer &lt;50 years)</li></ul>



# Staging Classification Of Breast Tumors



Stage 0	Stage 1	Stage 2	Stage 3	Stage 4
Neither palpable tumor nor axillary lymph nodes.	Tumor less than 2 cm, no lymph node involvement	Tumor more than 2 cm but less than 5 cm, 1 ipsilateral axillary lymph node involvement (movable)	Tumor more than 5 cm, with skin involvement or fixation, and involvement of fixed lymph node	Tumor of any size with distant metastases such as bone, liver, lungs, brain and including supraclavicular node involvement



50 y/o female with a 2 cm tumor and liver metastasis-> stage 4

## 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

# Histopathological Types Of Breast Cancer:

## **Infiltrating (or invasive) Ductal Carcinoma (IDC)** [More details in the next slide](#)

Starting in a milk passage, or **duct**, of the breast, this cancer breaks through the wall of the duct and **invades the breast's fatty tissue**.

It can spread to other parts of the body through the **lymphatic system** and through the **bloodstream**.

Infiltrating or invasive ductal carcinoma accounts for about 80 percent of all breast cancers.

**Most common type.**

## **Infiltrating (or invasive) Lobular Carcinoma (ILC)**

This type of cancer starts in the milk-producing **glands**. About 10 to 15 percent of invasive breast cancers are invasive lobular carcinomas. These are **multicentric**, and they can appear in the other breast as well (**bilateral**)

## **Medullary Carcinoma**

This type of invasive breast cancer has a relatively well-defined distinct boundary between tumor tissue and normal breast tissue. It accounts for about 5 percent of all breast cancers. **The prognosis for medullary carcinoma is better** than that for invasive lobular or invasive ductal cancer

## **Colloid Carcinoma**

This rare type of invasive disease, also called mucinous carcinoma, is **formed by mucus-producing cancer cells**. Prognosis for colloid carcinoma is better than for invasive lobular or invasive ductal cancer.

## **Tubular Carcinoma**

Accounting for about two percent of all breast cancers, tubular carcinomas are a special type of invasive breast carcinoma. They have a better prognosis than invasive ductal or lobular carcinomas and are often detected through breast screening

## **Adenoid Cystic Carcinoma**

This type of cancer rarely develops in the breast; it is more usually found in the salivary glands. Adenoid cystic carcinomas of the breast have a better prognosis than invasive lobular or ductal carcinoma

## surgical treatment of breast cancer depending on stage:

**Stage 1 and 2** → WLE or mastectomy, axillary nodes then radiotherapy and chemotherapy

**Stage 3** → neo-adjuvant chemotherapy then surgery

**Stage 4** → no role of surgery

### Imaging features which can be associated with ductal carcinoma in situ (DCIS):

- Micro-calcifications linear (75-90%)
- Circumscribed mass
- Ill-defined mass
- Prominent duct or nodule
- Architectural distortion
- Asymmetry
- Sub-areolar mass



### infiltrating (or invasive) Ductal Carcinoma (IDC)

Mammogram of DCIS with malignant microcalcifications. Note the fine, linear, heterogeneous clustered calcifications associated with an ill-defined mass lesion. Although **the hallmark imaging feature for DCIS is the presence of microcalcifications**, DCIS can also present less frequently without them.

### Ductal Carcinoma In Situ Treatment

Depending on the degree of DCIS the options of treatment are

- o Total mastectomy
- o Lumpectomy
- o Lumpectomy and radiationtherapy

DCIS does not spread to the axillary lymph nodes so these are usually not removed.

# Lines Of Treatment

- ❖ **Surgery** (:Surgical Intervention: 1. Mastectomy 2. W.L.E (wide local excision))
  - For Stage I and II **WLE** or mastectomy + axillary nodes
- ❖ **Radiotherapy.**
- ❖ **Chemotherapy.**
- ❖ **Hormonal therapy.**
- ❖ **Ovarian ablation.**
- ❖ **Reconstruction**

(**WLE** ) = A **wide local excision** is a surgical procedure to remove a small area of diseased or problematic tissue with a margin of normal tissue. This procedure is commonly performed on the breast and to skin lesions, but can be used on any area of the body

## Chemotherapy

Chemotherapy for breast cancer is usually given in cycles every 3 or 4 weeks.

- **The common schedules include:**

- ❖ **CMF** (Cyclophosphamide, Methotrexate and 5-Fluorouracil)
- ❖ **AC** (Adriamycin, Cyclophosphamide)
- ❖ **T axol or T axotere**

- **Chemotherapy side effects:**

- o Fatigue
- o Anorexia
- o Nausea and vomiting
- o Hairloss
- o Effects on the blood.
- o Mouth problems
- o Skin problems
- o Fertility
- o Bowel problems

### Prognostic Factors :

- Size of tumor
- Grade of tumor
- Lymph nodes involvement

## ❖ Radiotherapy

### Side effects

	Common reactions	Uncommon reactions
During the course of treatment	<ul style="list-style-type: none"><li>✓ skin reddening and irritation</li><li>✓ Fatigue</li><li>✓ loss of hair</li><li>✓ sore throat</li></ul>	<ul style="list-style-type: none"><li>✓ skin blistering</li><li>✓ nausea</li><li>✓ rib fractures (less than 1 in every 100)</li></ul>
After the course of treatment	<ul style="list-style-type: none"><li>✓ Discomfort and sensitivity in the treated area.</li><li>✓ increased firmness</li><li>✓ swelling of the treated breast</li></ul>	<ul style="list-style-type: none"><li>✓ Pneumonitis and scarring (about 1 or 2 women in every 100 women between 6 weeks and 6 months after therapy)</li></ul>

## ❖ Tamoxifen

- Tamoxifen is a drug that has been used for the treatment of breast cancer. It can increase survival for some women with breast cancer and reduce their risk of developing cancer in the opposite breast. Tamoxifen is sometimes used whose breast cancer recurs.
- It is also being tested to see if it can prevent the development of breast cancer in unaffected women who are at an increased risk because of a strong family history of the disease.
- Tamoxifen is taken by mouth. Tablets are either 10 mg or 20 mg.
- It is usually started after surgery or after the completion of radiation Rx
- Tamoxifen should take it at the same time each day.
- Currently the recommended length of Tamoxifen therapy is five years.

### Side effects

Common side effects	Uncommon side effects
<ul style="list-style-type: none"><li>• Hot flushes or sweats</li><li>• Irregular menstrual periods (in women who have not gone through the menopause)</li><li>• Vaginal irritation, including vaginal dryness or discharge</li><li>• Fluid retention and weight gain</li></ul>	<ul style="list-style-type: none"><li>• Light-headedness, dizziness, headache or tiredness</li><li>• Rash</li><li>• Nausea</li></ul>



## ❖ Lymphoedema

- **Definition:** Lymphedema is long-term swelling of the arm after axillary surgery or radiotherapy to the axilla.
- **Symptoms:** include a general heaviness of the arm, a swelling of the fingers or sometimes difficulty putting on a long sleeve.
- The earlier treatment is started the easier it is to achieve good results.
- Less than 1 in 10 women who have had either lymph glands removed or radiation to the armpit will develop noticeable lymphedema.
- This risk increases to 1 in 3 if the pt. had both of these treatments.
- It can occur any time after the operation, even up to 10 years.

## ❖ Post-operative Breast Reconstructions

- The aim of breast reconstruction is to rebuild the breast shape and, if desired, the nipple and the areola.
- **Benefits:**
  - Reconstruction usually doesn't restrict any later treatments, nor does it usually interfere with radiotherapy, chemotherapy or hormone therapy.
  - The patient will not need to wear an external prosthesis.
  - Follow-up after the operation is no more difficult and any recurrence of cancer in the area can still be detected.
  - Some women feel more self-confident and feminine after reconstruction
- **There are two main types of breast reconstruction:**
  - tissue or skin expander with breast implants
  - flap reconstruction



# MCQs

**Q1- It is advisable to remove a fibroadenoma if:**

- a. It is painful
- b. It is more than 3 cm in size
- c. There is a positive family history of breast cancer
- d. All of the above

**Q2- Which of the following factors increases the risk of breast cancer among women?**

- a. Obesity and nulliparity
- b. Age at menarche
- c. Multiple pregnancies
- d. Low-fiber diet

**Q3- Failure to perform radiation after wide excision of an invasive cancer risks which of the following outcomes?**

- a. Recurrence of cancer in the ipsilateral breast.
- b. Shorter survival time.
- c. Regional nodal recurrence.
- d. Greater chance of breast cancer mortality.

**Q4- A 21-year-old woman presents with an asymptomatic breast mass. Which of the following statement(s) is/are true concerning her diagnosis and treatment?**

- a. Mammography will play an important role in diagnosing the lesion
- b. Ultrasonography is often useful in the differential diagnosis of this lesion
- c. The mass should always be excised
- d. The lesion should be considered pre-malignant

**Q5- the most likely diagnosis in a 34 year old smoker with a nipple piercing, painful breast and bloody nipple discharge:**

- a- Duct ectasia
- b-Phyllodes tumour
- c-Lactation mastitis
- d-Periductal mastitis

# Thank You..

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