

# 430 SURGERY TEAM



## Breast Disease

**Done By:**

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**Thanks To:**

**Dalal AlQadi**

Green: Team notes

Red: Important notes.

Grey: The Doctor skipped this part

### **Resources:**

-Dr. Amal Al-Abdulkareem lecture

-Dr. Abdulaziz Al-Saif lecture

-429 Team notes and Abdullah Alaogayil's work

## **Anatomy:**

### **Breast modified sebaceous gland :**

- ❖ Upper border
  - Collar bone.
- ❖ Lower border.
  - 6th or 7th rib.
- ❖ Inner Border
  - Edge of sternum.
- ❖ Outer border
  - Mid-axillaryline

The **upper outer quadrant** is the most important quadrant, because mainly all malignancy occur in this fibrous area, but remember nothing is absolute! you can get malignancy anywhere in the breast.

### **Breast divided to 5 segments :**

#### ❖ Four Quadrants

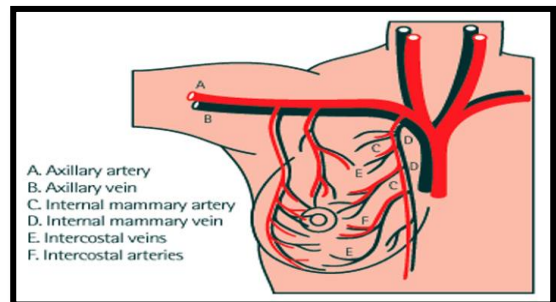
- By horizontal and vertical lines.

#### ❖ Tail of Spence

**Majority** of benign or malignant tumors in the Upper Outer Quadrant

### **Blood supply:**

- Lateral thoracic and acromiothoracic branch of axillary artery.
- Internal mammary artery
- Intercostal arteries.



### **External anatomy of the breast :**

#### ❖ Nipple

- Pigmented, Cylindrical
- 4th inter-costal space (at age 18) **but it could be anywhere higher or lower**

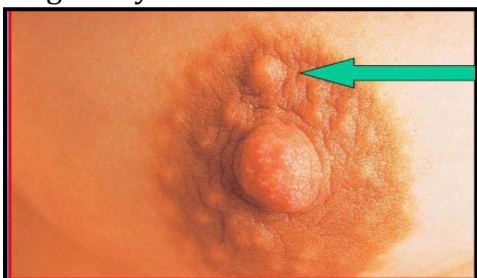
#### ❖ Areola

- Pigmented area surrounding nipple

#### ❖ Glands of Montgomery

- Sebaceous glands within the areola
- Lubricate nipple during lactation** (like a sweat gland but for breast)

### Montgomery's tubercles :



Blocked  
Montgomery  
Tubercle

**Sometimes this gland gets obstructed**

## Glandular tissue :

### **15-20 Lobes**

-Radiate around nipple and under areola, separated by fibrous septa (Cooper's ligaments)

#### ❖ **Lobe**

- 20-40 lobules

#### ❖ **Lobules**

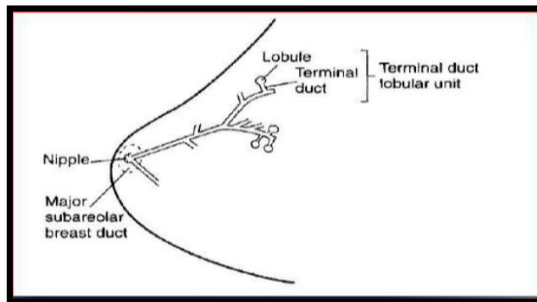
- Alveoli cells or acini

- Milk producing cells

#### ❖ **Lactiferous ducts**

- Drain milk into nipples (located at the end of the breast tissue)

Terminal lobular unit and branching system of ducts:



Tissue type:

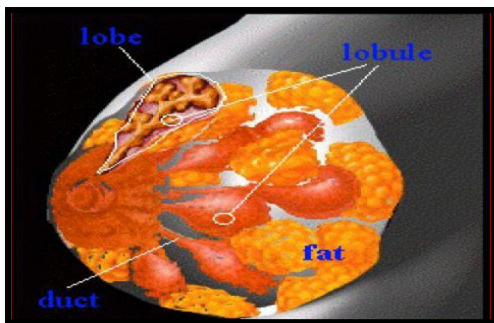
#### ❖ **Glandular Tissue**

- Milk producing tissue

#### ❖ **Fibrous Tissue**

#### ❖ **Fatty Tissue**

**Internal anatomy of the breast :**



## Fibrous tissue :

### **Cooper's Ligaments**

-Suspensor ligaments (for attachment and support)

- Extending through the breast to underlying muscle (from the muscle (the deep fascia of the pectoralis major m.) to the skin of the breast)

- Benign or malignant lesions may affect these ligaments

- Skin retraction, dimpling or tethering (During any mass or edema it will retract the breast tissue and give the breast the peau d'orange appearance)

### Fatty tissue :

- ❖ Subcutaneous and retro-mammary fat
- ❖ Bulk of breast. (gives the shape of the breast)
- ❖ No fat beneath areola and nipple

### Chest muscle :

\*important to know them while operating

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

Breast sets on:  
Pectoralis Major → 60%  
Serratus anterior → 30%  
Rectus sheath → 10%

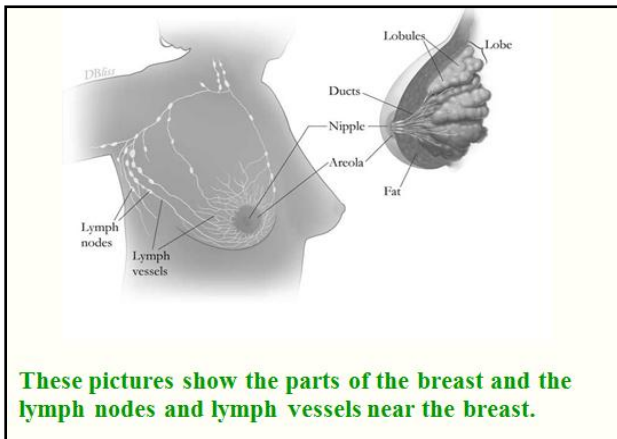
### Lymph nodes :

- ❖ Most drain towards axilla.
  - ❖ Superficial lymphatic nodes drain skin, so any pathology of the skin and the subcutaneous can involve the superficial LN, it drains directly to axilla.
  - ❖ Deep lymphatic nodes drain mammary lobules (deeper part of axilla)
- \*internal mammary nodes can't be felt, because they are beneath the sterna, can be seen only in radiological images.



#### • Groups of lymph nodes:

- Anterior: deep to pectoralis major.
- Posterior: along subcapular vessels.
- Lateral: along the axillary vein.
- Central: in axillary pad of fat.
- Apical: drains the above, behind clavicle at apex of axilla.



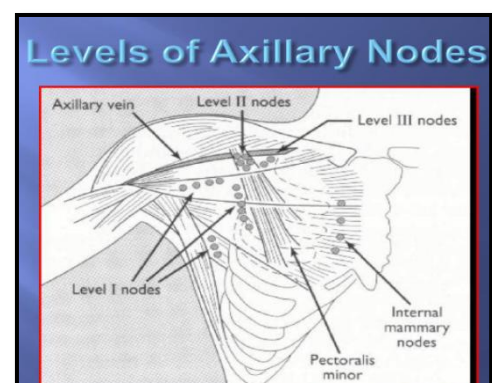
These pictures show the parts of the breast and the lymph nodes and lymph vessels near the breast.

### Levels of Axillary Nodes: (very important)

In relation to the tendon of the pectoralis minor muscle:

- LEVEL 1 below the pectoralis tendon ((1st to get involved in malignancy))
- LEVEL 2 behind the tendon
- LEVEL 3 above the tendon

\*it is important in the metastasis of the breast malignancies

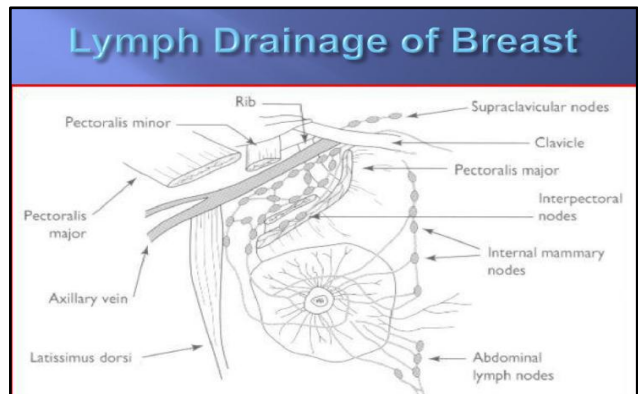


### Palpate ALL nodes

- 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



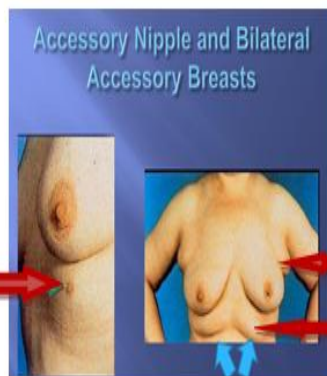
### Normal variation of the breast :

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

This is not fat! If we take a biopsy from this tissue and send it to the lab, it will appear that this is a real breast tissue.

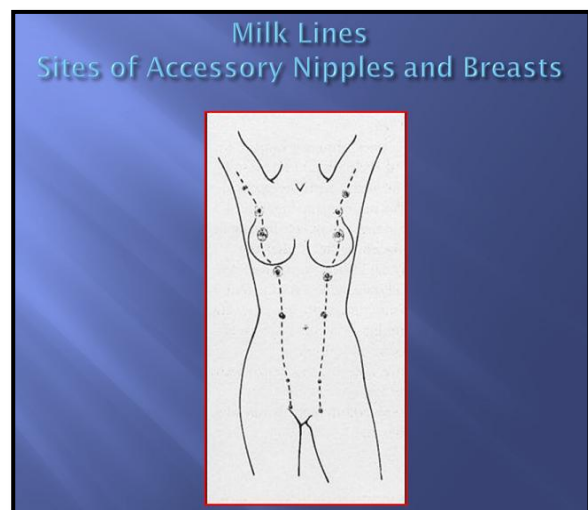
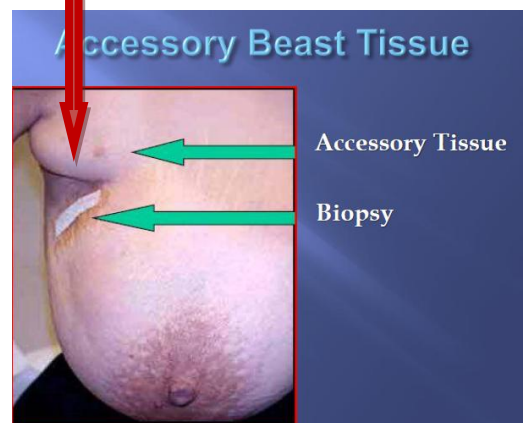
-Might develop during any hormonal change (during lactation, pregnancy and puberty)

-we remove it only for cosmetic reasons



An extra 3<sup>rd</sup> nipple under the breast showing on the milk line  
-it appears because of congenital Process.

-we remove it only for cosmetic reasons



### Physiology of breast :

- ❑ **Puberty**
  - Need estrogen and progesterone**never interfere surgically during puberty (augmentation or reduction) if asymptomatic**
- ❑ **Estrogen**
  - **Growth** and appearance
  - Milk-producing system
- ❑ **Progesterone**
  - Lobes and **alveoli**
  - Alveolar cells become secretory

**Asymmetry is common.**



## ❖ Menses

### ✓ Progesterone

- 3-7 days prior to menses
- Engorgement

### ✓ Physiologic nodularity

- Retained fluid (that's why we advice patients to avoid tea and coffee)
- ✓ **Mastalgia** (breast pain which is quite normal in most of conditions  
eg: cyclic mastalgia)

## ❖ 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

## ❖ Aging

### ➤ Perimenopause

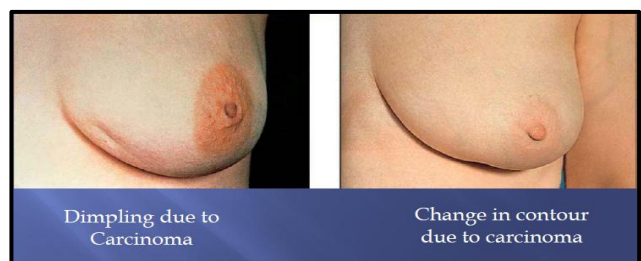
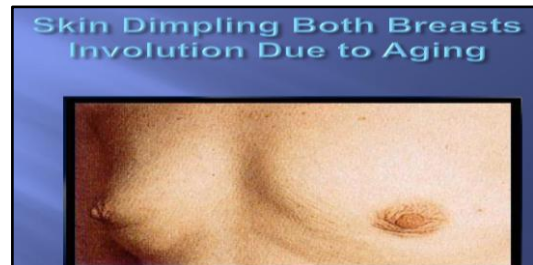
- Decrease in glandular tissue
- Loss of lobular and alveolar tissue
- **Flatten, elongate, pendulous**
- **Infra-mammary ridge thickens**
- **Suspensory ligaments relax**
- **Nipples flatten**
- **Tissue feels "grainy"**

Dimpling indicate malignant feature of breast,  
but in elderly patient considered normal  
because all the breast tissue will be  
atrophied so the cooper ligament at this age

Inverted nipple: another pathology we  
should worry about.  
It could be normal but first thing you have  
to exclude malignancy.  
If women presented with inverted nipple  
very early in her life it can be of  
congenital reason,  
the problem she may face is difficulty

Most of women at least experience cyclic  
pain once in their life especially in the outer  
upper  
quadrant, the pain getting worse a week  
before menstruation and improve during  
period,  
why it improves? First cyst is formed then  
fluid start to accumulate inside it under the  
effect

Women who are not lactating can be  
present with galactorrhea, she can have  
pituitary tumor so anything present with  
bilateral nipple discharge usually because of  
systemic reason not localized breast



## CLINICAL APPROACH:

### 1. **History:**

Full and complete history should be taken, particular attention should be paid to:

- Breast development stating from childhood to present.
- Endocrine status of patient mainly menstruation and oral contraceptive pills (OCP).

OCP may produce a slight increase in the risk.

- Size of lump in relation to menses.
- lactation
- Pattern of pain in relation to menses.
- How regular the cycle is and quantity of blood.

The probability of breast cancer increases with age, but breast cancer tends to be more aggressive in younger people.

- Changes in breast during previous pregnancies e.g. abscess, nipple discharge, retraction of nipple.
- Number of pregnancies (having more children → lower risk).

Never having children triples the risk

- Breast feeding → lower the risk

- Abnormalities which took place during previous lactation period e.g. abscesses, nipple retraction, milk retention.

- Family history of breast diseases especially cancer and particularly in near relatives.

Having one first-degree relative (mother, sister, or daughter) with breast cancer approximately doubles a woman's risk. Having 2 first-degree relatives increases her risk about 3-fold

- Nipple discharge.

- Age at menarch (early menarche → higher risk).
- Age at 1st birth (Lower age of first childbirth → lower risk).

having the first live birth after age 30 doubles the risk compared to having first live birth at age less than 25

- Last menstrual period (L.M.P)

For past menopausal women:

- Hormonal replacement therapy (HRT) → for 5 or more years after menopause can increase risk
- Date of menopause (later menopause → higher risk)

A woman with cancer in one breast has a 3- to 4-fold increased risk of developing a new cancer in the other breast or in another part of the same breast.

Women with dense breasts have a higher risk of breast cancer than women with less dense breasts. Unfortunately, dense breast tissue can also make mammograms less accurate

### 2. **Clinical examination.**

(discussed next page)

### 3. **Imaging.**

### 4. **Cytology and tissue diagnosis.**

#### Techniques Available for Investigations:

- Clinical examination.
- Cytology of discharge.
- Mammography as 1<sup>st</sup> step if above 35 yrs and ductography.
- Ultrasound when age < 30 yrs.
- Imaging-guided percutaneous biopsy.
- MRI
- Nuclear medicine (include PET).

## 2- Clinical Examination :

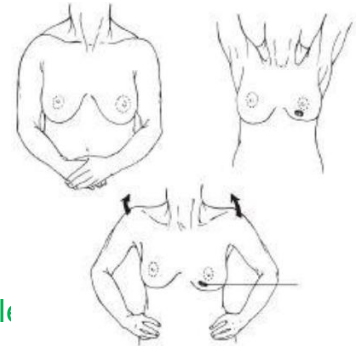
self examination should be done regularly at the same day each month (preferably just after a period)

- Examine in sitting and supine position and 45degree position (preferred with 45 only).
- Expose from waist and above.
- Examine normal side first.

### ❖ Inspect Both Breasts

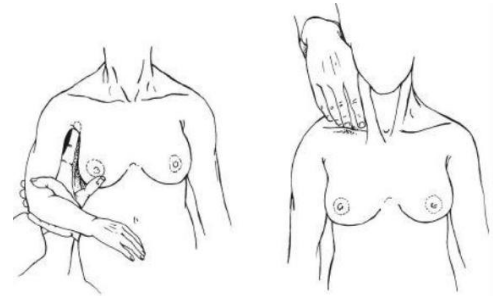
(for size, symmetry, skin changes, nipple complex)

- Arms at sides
- **Arms over head**
- Arms on hips with valsalva  
ask the patient to press against her hip, to contract the pectorals muscle  
any mass or tethering will be visible.
- Leaning forward



### Palpate

- ❖ Palpate Sitting
- ❖ Rest arm in your hand and palpate axilla
- Her arm should be relaxed
- ❖ Palpate supra-clavicular and infra-clavicular Nodes
- examine all groups of lymph nodes (5 groups mentioned above)



### Lay supine

- ❖ Place pad or pillow under shoulder to flatten breast
- ❖ Raise arm over head
- ❖ Abnormal finding? Check the other breast!
- ❖ Using preferred pattern
- ❖ Palpate with pads of three fingers
- ❖ Palpate in circular rotating movement
- ❖ Compress through all layers of tissue
- ❖ Note any discharge, thickening and lumps.



Don't forget to check: collar bone, axilla and both breasts.  
Back, lungs and abdomen (if metastasized)

## Common breast disorder

### 1- Fibrocystic changes

the commonest pathology of the breast basically consists of fibrous tissue and cyst.

#### ❖ **Lumpy, bumpy breasts**

(woman with lots of glands in her breast could feel it lumpy, not considered pathology)

#### ❖ **50-80% of all menstruating women**

#### ❖ **Age 30-50 (30 and above)**

- 10% in women less than 21 (incidence decrease with the decreasing of age)

#### ❖ **Caused by hormonal changes prior to menses**

so it gets better by hormonal therapy

#### ❖ **Relationship to breast cancer doubtful**

### S&S:

#### ❖ Mobile cysts with well-defined margins

#### ❖ Singular or multiple

#### ❖ May be symmetrical

#### ❖ Upper outer quadrant or lower breast border

#### ❖ **Pain and tenderness** (pain and discomfort before period is the main symptom)

#### ❖ **Cysts may appear quickly and decrease in size**

#### ❖ **Lasts half of a menstrual cycle**

#### ❖ **Subside after menopause** (If no HRT: hormonal replacement therapy)

### Diagnosis:

- US

- if 40y and more → US and mammogram

- cytology to make sure there is no underlying malignancy

### Treatment :

#### ❖ **Aspirate cyst fluid (2cm and more)**

#### ❖ **Imaging for questionable cysts**

#### ❖ **Treatment based on symptoms**

#### ❖ **Reassure**

#### ❖ **"Atypical Hyperplasia" on pathology report → indicates increased risk of breast cancer** (so in here biopsy is needed)

-constant cyst → biopsy

-complicated cyst: solid + cystic component → biopsy (suspect malignancy)

#### Breast Cyst Aspiration:

-If non-bloody fluid → observe and send for cytology.

-If bloody → surgical biopsy.

-if doesn't resolve → surgical biopsy.

-if recurs multiple times → surgical biopsy.

### comfort measures :

#### **Eliminate Methylxantines (coffee, chocolate)**

(avoid tea and coffee because they retain water)

- May take 6 months for relief

#### ❖ **Local heat/cold**

#### ❖ **Support bra** (full cup)

if she stopped wearing bras → more fluid to accumulate → get worse → more pain and more cyst formation

#### ❖ **Low-Sodium diet** (water retention)

#### ❖ **Vitamin E**

- **Antioxidant (primrose oil)**

- Do not take more than 1200/day

## Medication and mastalgia :

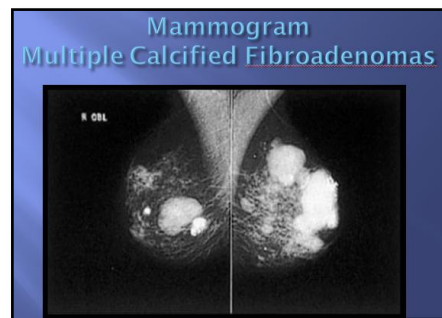
- ❖ **NSAIDS**
- ❖ **Monophasic oral contraceptive pills** (to stop ovulation → stop the estrogen surge during ovulation that cause the congestions)
- ❖ **Spirinolactone**
- ❖ **Dopamine Agonists**
  - Bromocriptine
- ❖ **Rare or former use**
  - **Danazol** (in severe cases "intractable pain" because it is a steroidal agent and cause many side affect eg: acne)
  - Tamoxifen
  - GnRH agonist (Luprolide)

## 2-Fibroadenoma (lump in breast) :

It consists of fibrous tissue, glandular tissue (predominant) and stroma, benign, well –capsulated tumor and it is never being malignant)

Benign lesions, 15-30 years old of age.

- ❖ Second most common breast condition
- ❖ Most common in black women (and here in Middle East)
- ❖ Late teens to early adulthood (15-35 years old)
- ❖ Rare after menopause

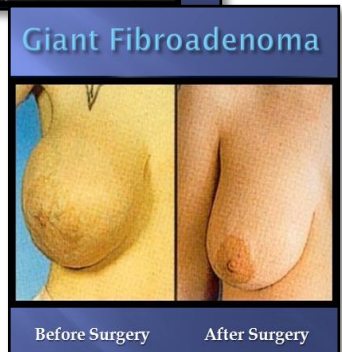


## S&S :

- ❖ Firm, rubbery, round, mobile mass, usually bilateral
- ❖ Painless, non-tender
- ❖ Solitary
- Well circumscribed
- ❖ Upper-outer quadrant

1-5 cm or larger

- Giant fibroadenoma is a 5cm large lump and more (can reach 20cm)
- fibroadenoma stays as it is or calcified and could get smaller or larger.
- there might be central necrosis inside the lump during pregnancy→shrink



## Treatment :

- ❖ **Imaging**
- ❖ **Biopsy**
- ❖ **Excision**
- ❖ **Close follow-up**

There is no need for surgery unless with

Indications: (very very important)

- 1- more than 4cm (giant)
- 2-painful
- 3- rapidly growing
- 4- family history of breast malignancy (Only for psychological reasons because patient will keep thinking it is malignant).
- 5- Patient has no access for regular follow up or asked you to remove it
- 6- above the age of 30
- 7- when diagnosis is not 100% sure or biopsy results are worrying

### 3- Phylloides Tumor:

A variation of fibroadenoma (the same component as of the fibroadenoma but has a stromal predominance )

it can change to malignancy especially if the excision is incomplete.  
(recur locally) but remember fibroadenoma alone never be malignant!



- ❖ **Giant fibroadenoma with rapid growth**
- ❖ **Malignant potential**, rarely metastasized but if so to the lungs but not to the axillary lymph.  
biopsy → found it phylloids → reportable case of malignancy.
- ❖ **Often occurs in women aged 40+**
- ❖ **Treatment**
  - Excisionmalignant phylloids tumor → mastectomy

Bigger size = less metastasis

### Causes of bloody nipple discharge:

- 1- trauma (from lactation)
- 2- intraductal papilloma
- 3- malignancy



### 4-Intraductal Papilloma

Tiny lesion inside the duct, usually single (which is benign), if it gets larger you can operate (ducts normally 2-3 mm in size)

- ❖ **Slow-growing**
- ❖ **Overgrowth of ductal epithelial tissue**
- ❖ **Usually not palpable** (but it can be, if the duct get block because of secretion accumulation)
- ❖ **Cauliflower-like lesion**
- ❖ **Length of involved duct** (but usually located in the terminal duct)
- ❖ **Most common cause of bloody nipple discharge**
- ❖ **40-50 years of age**



### S&S :

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

Intraductal papillomatosis:  
-pre-malignant condition  
- Multiple filling defects  
→ must take it out

If unilateral, single duct, spontaneous and without squeezing → pathological  
but when it is bilateral and came through multiple duct we cannot consider it as pathology of the breast (caused by systemic reason ex: hormonal imbalance)

## Treatment :

- ❖ Test for occult blood
- ❖ **Ductogram** (for both diagnosis and treatment)
- ❖ Biopsy
- ❖ Excision of involved duct (If blood is persistent)

Diagnosed by: ductogram (filling defect), US or mammogram to exclude malignancy.

## 5- Mammary Duct Ectasia

- ❖ **Inflammation and dilation of sub-areolar ducts**

behind nipples (lactiferous duct),  
it happens due to pregnancy, lactation and  
by age process (late 30s till the end of life)

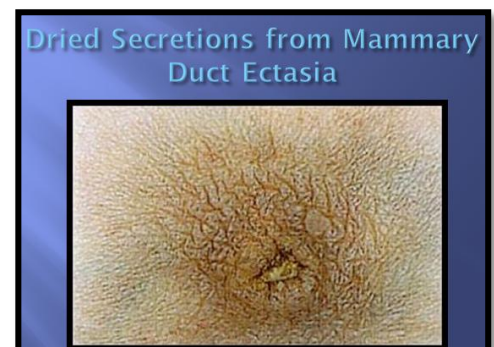
- ❖ May result in palpable mass because of ductal rupture
- ❖ Greatest incidence after menopause
- ❖ Etiology Unclear
  - Ducts become distended with cellular debris causing obstruction
  - It can give the appearance of inverted nipple slip like (so exclude malignancy)
  - The dilatation of ducts is normal but milk stasis might occur then → infection → abscess → antibiotics + drainage (this is called periductal mastitis or periductal abscess)



## S&S :

- ❖ **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 (Don't squeeze the nipple!)

If the blood came out after squeezing then it is considered as an injury only but if it came out by itself it is considered pathological



### Treatment :

- ❖ Test for occult blood
- ❖ Imaging
  - Mammogram
  - Sonogram
- ❖ Biopsy
  - Excision of ducts if mass present
- ❖ Antibiotics
  - usually mixed organisms so → broad spectrum antibiotic
  - if secondary, staph aureus from baby sucking
- ❖ Close follow-up

Diagnosis: in young → US  
- 40y and older → US + mammogram  
- send secretion for cytology and do culture

It doesn't affect breast feeding, all what she has to do is to clean her nipple gently and without squeezing.

### 6- Mastitis

- ❖ **Breast infection** when bacteria enter the breast via the nipple
- ❖ Ducts infected
- ❖ Fluid stagnates in lobules
- ❖ **Usually during lactation** or ladies with congenital problem like inverted nipple.
- ❖ Penicillin resistant staphylococcus common cause

### S&S :

- ❖ **Pain, hot and tender**
- ❖ Nipple discharge
  - Pus
  - Serum
  - Blood
- ❖ Localized induration
- ❖ Fever



This type of bras designed especially for lactation

### Treatment :

- ❖ **Antibiotics:** Oxacillins for PP mastitis and cephalosporin for other abscesses
- ❖ Empty breast if PP (postpartum)
- ❖ Incision and drainage of abscess
- ❖ Analgesia

Like duct Ectasia, It doesn't affect breast feeding, but if she's worried about antibiotics she can empty her breast.



Where to drain the abscess? At the most thin area in the centre of the abscess"

## 7- Fat Necrosis

Diffuse lump, not painful in most of the time.  
a condition mimicking breast cancer.

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



Clinically and radiologically similar to malignancy,  
so you have to take true cut biopsy to assure her.

## 8- Male Gynecomastia

Enlargement of male breast tissue, the most important thing is to exclude underlying malignancies like Estrogens producing tumor (testicular tumor, adrenal tumor) or extra-adrenal secreting tumor like lung malignancies.

In male we are worried about nonbreast tissue problem (other source of hormones).

- ❖ **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**

### Medications Associated with Gynecomastia

- ❖ **Marijuana**
- ❖ **Narcotics**
- ❖ **Phenothiazines**
- ❖ **Diazepam**
- ❖ **Anything that affects the CNS**



- ❖ Thiazide, antacid (ranitidine)

Order US or CT to exclude adrenal malignancy

## 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

pregnancy is the common cause of nipple discharge+ lactation

- Common causes in non-pregnant women

- ❖ Carcinoma
- ❖ Intraductal papilloma
- ❖ Fibrocystic changes
- ❖ Duct ectasia
- ❖ Hypothyroid
- ❖ Pituitary adenoma
- ❖ Cyst communicating with duct system

- 5% of women coming to clinic.
- 95% of them → benign

In nipple discharge, we should first identify the source of discharge, then we consider ductogram, if there is papilloma we remove it because 10-15% of papilloma could be cancer.

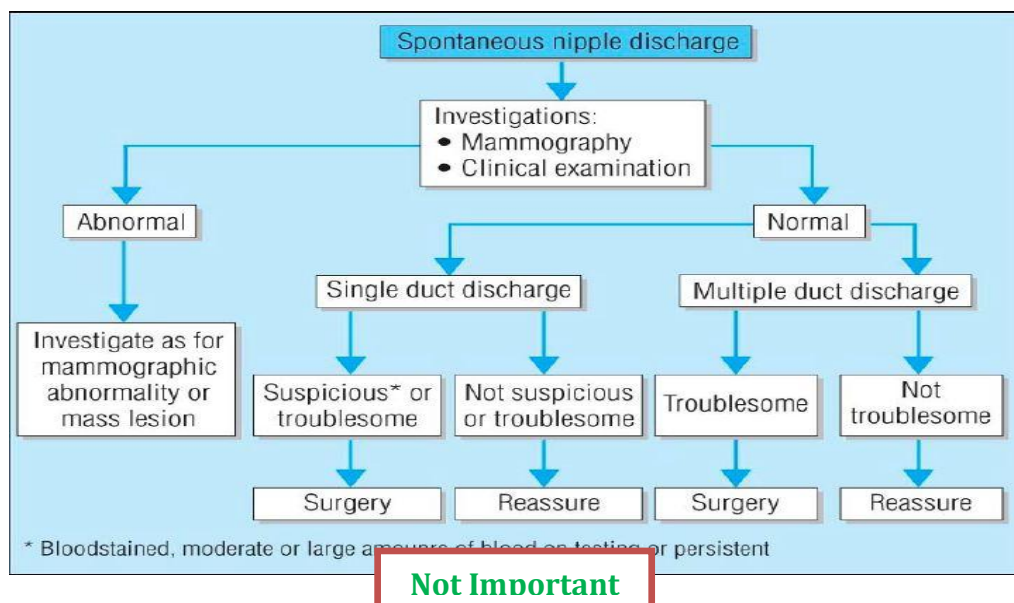
But usually non- bloody discharge are of benign causes

Most important points in history are

- Is it spontaneous or on pressure?”
- Is it coming from single or multiple?

Management:

- Observation
- Single duct excision
- Total duct excision



Not Important

## Clinical Characteristic

- ❖ **Physiologic**
  - Usually bilateral
  - Multiple ducts
  - Non-spontaneous
  - Screen for phenothiazine use and stimulation
- ❖ **Pathologic discharge**
  - Spontaneous
  - Unilateral
  - Single duct
  - Discolored discharge

## Evaluation:

- ❖ **Clinical Exam**
- ❖ **Test for presence of blood in discharge**
- ❖ **Lab tests**
  - Thyroid, prolactin
- ❖ **Imaging**

## Treatment :

- ❖ **Physiologic**
  - Treat cause if present
  - Follow-up 6 months
- ❖ **Pathologic**
  - Biopsy and excise

## BASIC INVESTIGATIONS OF BREAST DISEASES:

Note that Dr. Abdulaziz Al-Saif lecture is full with radiological images which are not included here and it is only for your interest except the 2 US images below which the Doctor discussed the most.

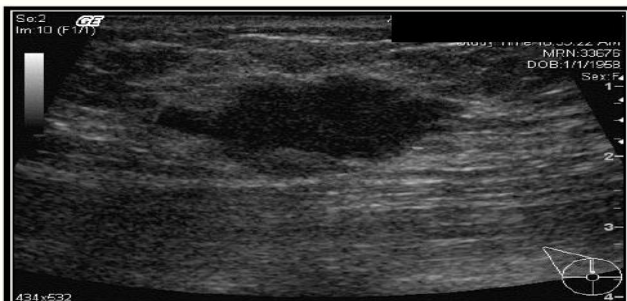
-US is considered as an extension of palpation in investigating breast lesion, it is the initial examination in the younger woman, Very good at detecting cysts and it can “see through” mammographically dense breasts, can be done frequently unlike mammography in which the least period between each test and another is 6 months. But there are several problems which can affect the quality of an US image:

- Small lesions deep within echogenic parenchyma.
- Small lesions in larger breasts
- Dense parenchyma interspersed with fatty lobules.
- Surgically scarred breasts.
- Multiple mammographic lesions.
- Complicated cysts.
- Cellular malignancies

US not good for screening

-it is important to comment on location, size, solid or cystic, margin of lesion and Surrounding structures. Take account of both mammographic and US appearances.

### **Spiculated Margins**



Next step is Biopsy

### **ill-Define margins**



If you find this in a patient the further investigations depend on the age:  
If it is old age → do mammogram  
If it young age → do biopsy

### Fine needle aspiration biopsy: (FNAB)

-Clinically or US guided.

There are 2 types of biopsy:

-Core biopsy: which is better because it takes the tissue not only cells but it is painful and costly.

-Open biopsy.

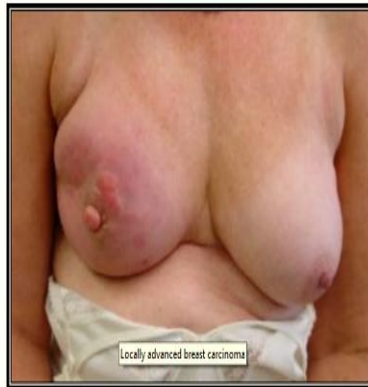
## BREAST CANCER:

- Breast cancer is the most common cancer in women aged over 35 years - 29% of all cancers diagnosed.
- The average age of diagnosis of breast cancer in women is 45 - 55 years.
- Curable if discovered early.
- Breast carcinoma is common in nulliparous women.
- Most common site is upper outer quadrant, which includes the axillary tail.
- Metastasis can be through blood vessels, lymphatic, or local up to skin.

Typical presentation



Mass + inverted nipple



Shows skin invasion



Show eruption of the capsule + Lymphoedema (swelling of hand) imp!

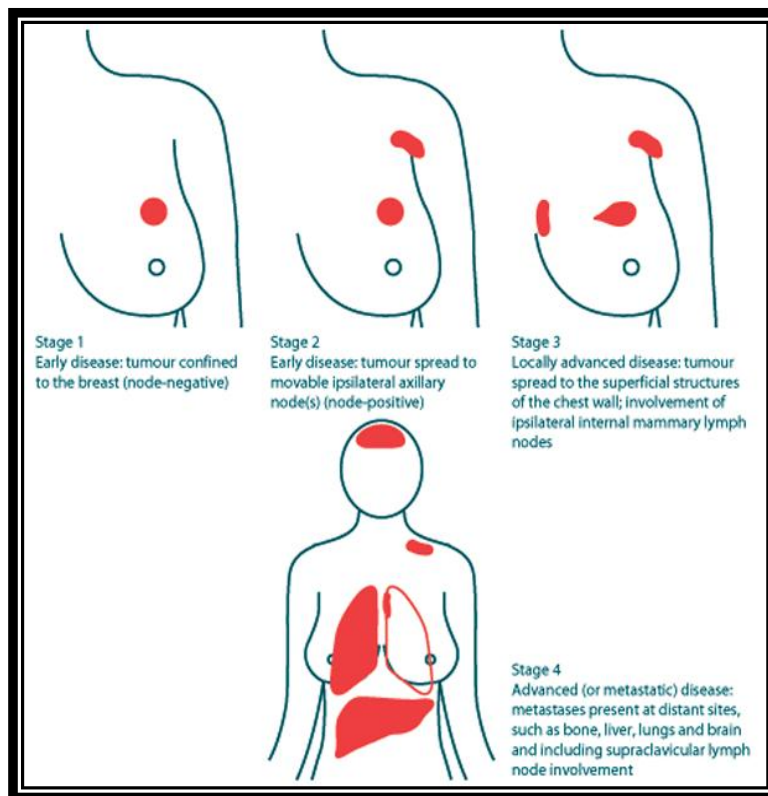
Swelling of the arms caused by lymphatic or venous obstruction in the axilla (lymphoedema)

After axillary surgery or radiotherapy to the axilla

## Risk Factors of Breast Disease:

Factor	High-risk group	Low-risk group	Factor	High-risk group	Low-risk group
	Relative risk >4.0	Relative risk ≤1.0		Relative risk=1.1B2.0	Relative risk ≤1.0
Age	Old	Young	Socio-economic status	High	Low
Country of birth	North America, Northern Europe	Asia, Africa	Place of residence	Urban	Rural
Mother and sister with history of breast cancer, especially if diagnosed at an early age	Yes	No	Race/ethnicity		
Biopsy-confirmed atypical hyperplasia and a history of breast cancer in a first degree relative	Yes	No	breast cancer at >45 years	White	Hispanic, Asian
	Relative risk=2.1B4.0	Relative risk ≤1.0	breast cancer at <45 years	Black	Hispanic, Asian
Nodular densities on the mammogram	Densities occupying >75% of breast volume	Parenchyma composed entirely of fat	Religion	Jewish	Seventh-day Adventist, Mormon
History of cancer in one breast	Yes	No	Oophorectomy before age 40	No	Yes
Mother or sister with history of breast cancer, diagnosed at an early age	Yes	No	Nulliparity, breast cancer at >40 years of age	Yes	No
Biopsy-confirmed atypical hyperplasia without a family history of breast cancer	Yes	No	Age at first full-term pregnancy	>30 years	<20 years
Radiation to chest	Yes	No	Age at menarche	<11 years	>15 years
			Age at menopause	>55 years	<45 years
			History of primary cancer in endometrium, ovary	Yes	No
			Obesity		Thin
			breast cancer at >50 years	Obese	
			breast cancer at <50 years	Thin	Obese

## STAGING:



- **Stage 1:** anything less than 2cm localized to the breast.
- **Stage2:** 2-5cm size and metastasized to axillary lymph node (movable)
- **Stage3:** more than 5 cm and with skin changes or fixed axillary lymph node.
- **Stage4:** any distant metastasis.

## Malignancies of the breast:

The most important types are ductal carcinoma and lobular carcinoma.

**1- Ductal carcinoma:** it is the commonest disease in the breast and the commonest site for malignancies. There is ductile carcinoma in situ (DCIS) which is inside the duct with NO invasion (microcalcifications in 75-90%) and invasive ductile carcinoma (accounts for about 80% of all breast cancers).

When malignant cells migrate along the ducts to the nipple, they produce the skin changes known as: Paget's disease

### **How is DCIS treated?**

-Depending on the degree of DCIS the options of treatment are Total mastectomy Lumpectomy Lumpectomy and radiation therapy.

-DCIS does not spread to the axillary lymph nodes so these are usually not removed but in other carcinomas should be removed.

### **Lines of breast cancer treatment by stages:**

Stage 1 and 2: surgery (mastectomy or lumpectomy) then chemotherapy or radiotherapy.

Stage3: they need to have neoadjuvant, chemotherapy before the operation to reduce the size of the tumor and then you operate.

Stage 4: go directly for chemotherapy.

Hormonal therapy, ovarian ablation and reconstruction (plastic) might be needed.

### **Prognostic Factors:**

- 1-Size.
- 2-Grade.
- 3-LN involvement.

### **Investigations:**

mammogram, US and **biopsy**.

### **Surgical Intervention:**

#### **For breast tissue:-**

- Mastectomy: all breast removal
- Wide Local Excision(WLE) : for tumor removal only

#### **For lymph nodes:**

- axillary dissection: removal of axillary lymph nodes
- sentinel lymph node biopsy: removal of 2-3 lymph nodes which act as sentinel

## **2- Lobular carcinoma:**

This type of cancer starts in the milk-producing glands and accounts for 10 to 15 % of invasive breast cancers.

The same apply here for lobular carcinoma but the only different is that it is multicentric (comes in more than one area), different than multifocal (same area have multifocal).

and there is tendency to come in the other breast (bilateral) so it's important to ask in history about other breast problems.

-Other types of carcinomas are: medullary, colloid (formed by mucus-producing cancer cells), tubular and adenoid cystic carcinoma.

-Those types are generally have a better prognosis than invasive lobular or invasive ductal cancer.

-Other Rare pathology of breast: sarcoma, cystosarcoma, lymphoma

### **For your information:**

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 significantly reduce their risk of developing cancer in the opposite breast, sometimes it is used for patients whose breast cancer recurs.

It is usually started after surgery or after the completion of radiation treatment and should be taken at the same time each day (because it is hormonal) for 5 years.

Many patients come with back pain (caused by secondary infiltration and collapse of lumbar vertebrae), cough, jaundice and then we find a mass in their breast! (metastasized to those organs).

## **Post operative breast reconstructions:**

to rebuild the breast shape and, if desired, the nipple and areola.

There are two main types of breast reconstruction:

1-tissue or skin expander (filled with saline to stretch the skin enough to accept an implant beneath the chest muscle) with breast implants following a mastectomy.

2-flap reconstruction.

## Summary

- The upper border of breast starts from **collar bone**.
- The **upper outer quadrant** is the most important quadrant, because it's the sight of most malignancies.
  - Glands of Montgomery main function is lubricating nipple during lactation.
- Cooper ligament responsible for supporting and attaching the breast from deep muscle to skin, when affected the skin retracted giving the peau d'orange appearance.
  - Most of lymph nodes drainage toward **axilla**.
- Internal mammary nodes can't be felt, because they are beneath the sterna, can be seen only in radiological images.
- **Levels of Axillary Nodes is important in the metastasis of the breast malignancies , it is divided in relation to the tendon of the pectoralis minor muscle to :**
  - LEVEL 1 → below the pectoralis tendon ((1st to get involved in malignancy))**
  - LEVEL2 → behind the tendon and LEVEL3 → above the tendon**
- Accessory nipples and extra breast tissue are removed only for cosmetic reasons.
- Never interfere surgically during puberty (augmentation or reduction) if asymptomatic
- anything present with bilateral nipple discharge usually because of systemic reason not localized breast pathology
  - Dimpling indicate malignant feature of breast, but in elderly patient considered normal
  - Mastalgia is breast pain which is quite normal in most of conditions
- Fibrocystic changes is the commonest pathology of the breast , caused by hormonal changes prior to menses, pain and discomfort before period is the main symptom, avoid tea and coffee to relieve symptoms.
- **Breast Cyst Aspiration: If non-bloody fluid → observe and send for cytology, If bloody → surgical biopsy, if doesn't resolve → surgical biopsy, if recurs multiple times → surgical biopsy.**
- Fibroadenoma is a benign well –capsulated tumor which **never being malignant**, there is no need for surgery unless **more than 4cm, painful ,rapidly growing, family history of breast malignancy**, Patient has no access for regular follow up or asked you to remove it, above the age of 30 , when diagnosis is not 100% sure or biopsy results are worrying. If it is multiple remove the painful big one only.
- Phylloides tumors: a variation of fibroadenoma which can change to malignancy especially if the excision is incomplete, **mastectomy** is indicated.
- Intraductal Papilloma is the commonest cause of bloody nipple discharge , if it gets larger you can operate but Intraductal papillomatosis is a pre-malignant condition with filling defects, must take it out.
  - If unilateral, single duct, spontaneous and without squeezing → pathological
- Mammary duct ectasia is an inflammation with yellow green, thick discharge. It happens due to pregnancy, lactation and by age process. The dilatation of ducts is normal but milk stasis might occur then → infection → abscess → antibiotics + drainage. It doesn't affect breast feeding.
- Mastitis is an infection with pain, hot and tenderness. Usually comes during lactation or ladies with congenital problem like inverted nipple . It doesn't affect breast feeding.
- Fat necrosis is a diffuse non painful lump; it mimics breast cancer both clinically and radiologically, so you have to take true cut biopsy to assure it, resolves over time without treatment.
- In male gynecomastia, it is important to exclude underlying malignancies like estrogens producing tumor, order US or CT to exclude adrenal malignancy.
  - Pregnancy is the common cause of nipple discharge then fibrocystic changes and duct ectasia.
    - Usually non- bloody discharge are of benign causes.
- The gold standard for investigating a breast disease is US for women ages less than 30 years and mammogram for women more than 35 years old. If there is secretions → send to cytology.
  - Ductogram is used in ductal breast disease for any age group.