

Benign breast disease

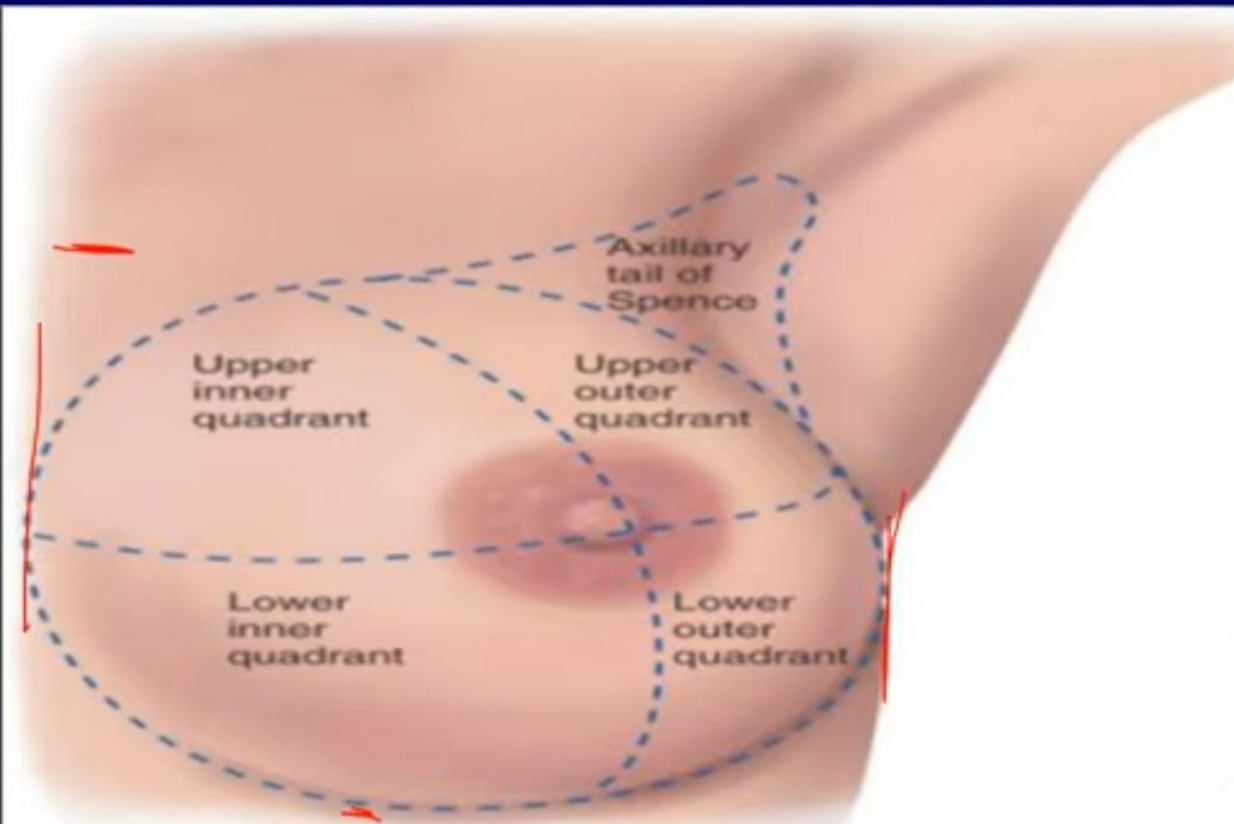
E J Arteen
FRCSI

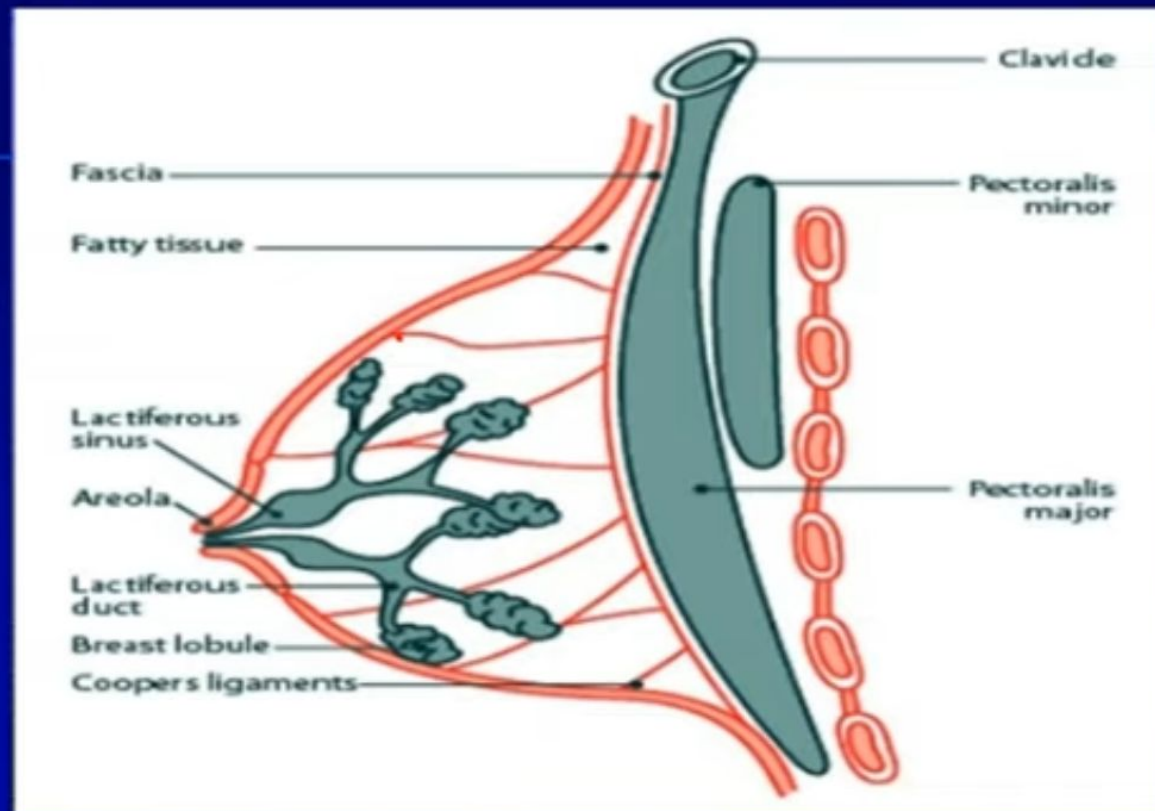
Anatomy of the breast

- Modified apocrine sweat gland.
- Develop along milk line ,axilla to groin .
- Located in superficial fascia (15-20) lobes .
- Each lobe has its own lactiferous duct.
- Cooper's ligaments (fibrous bands of CT) that run perpendicular to dermis of skin.
- 2nd 6th rib, sternum to mid Axillary line.
- **Axillary Tail of Spence** : pierce the deep fascia to enter axilla.

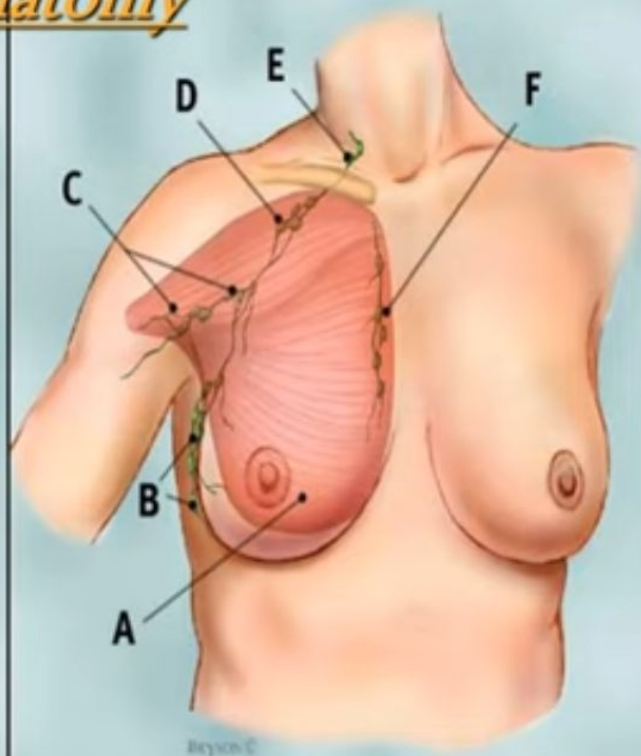
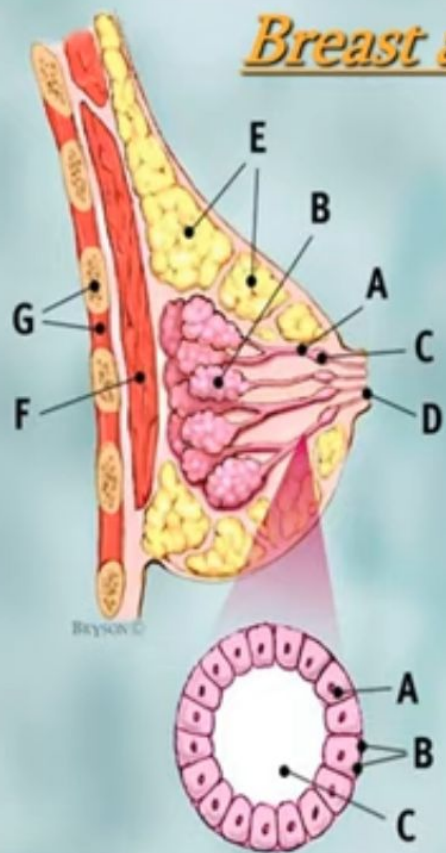


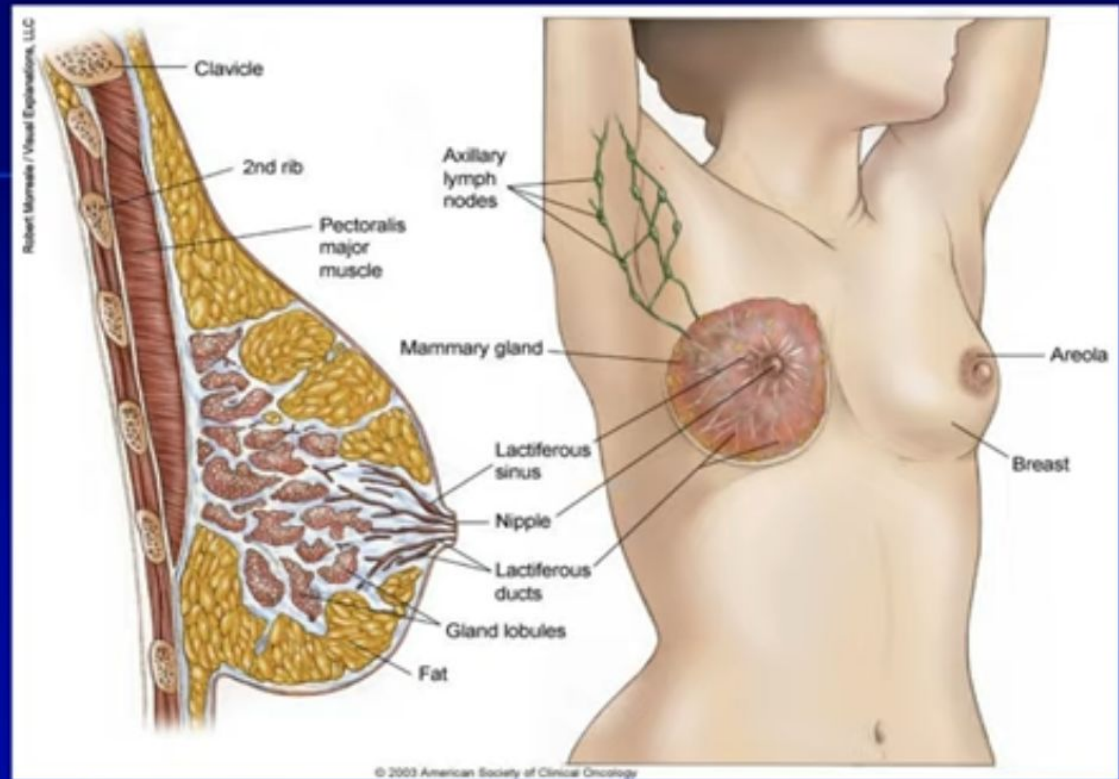
Breast Quadrants

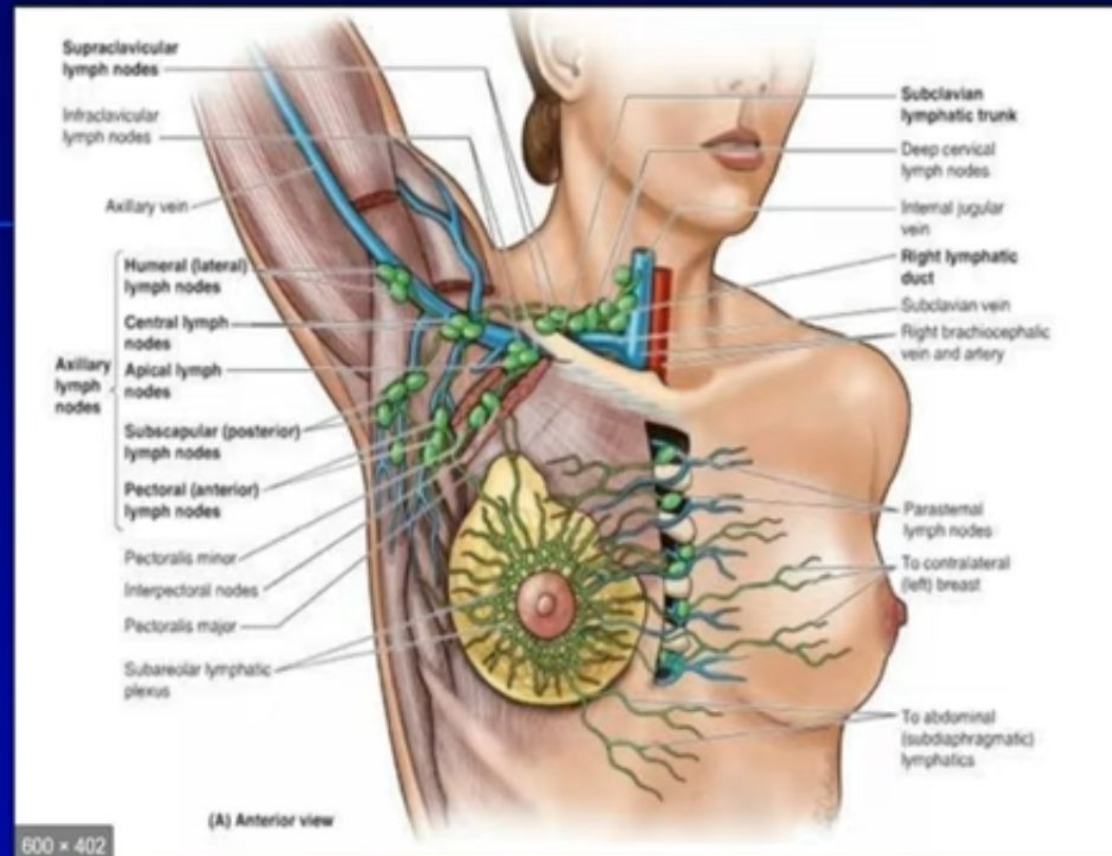




Breast anatomy

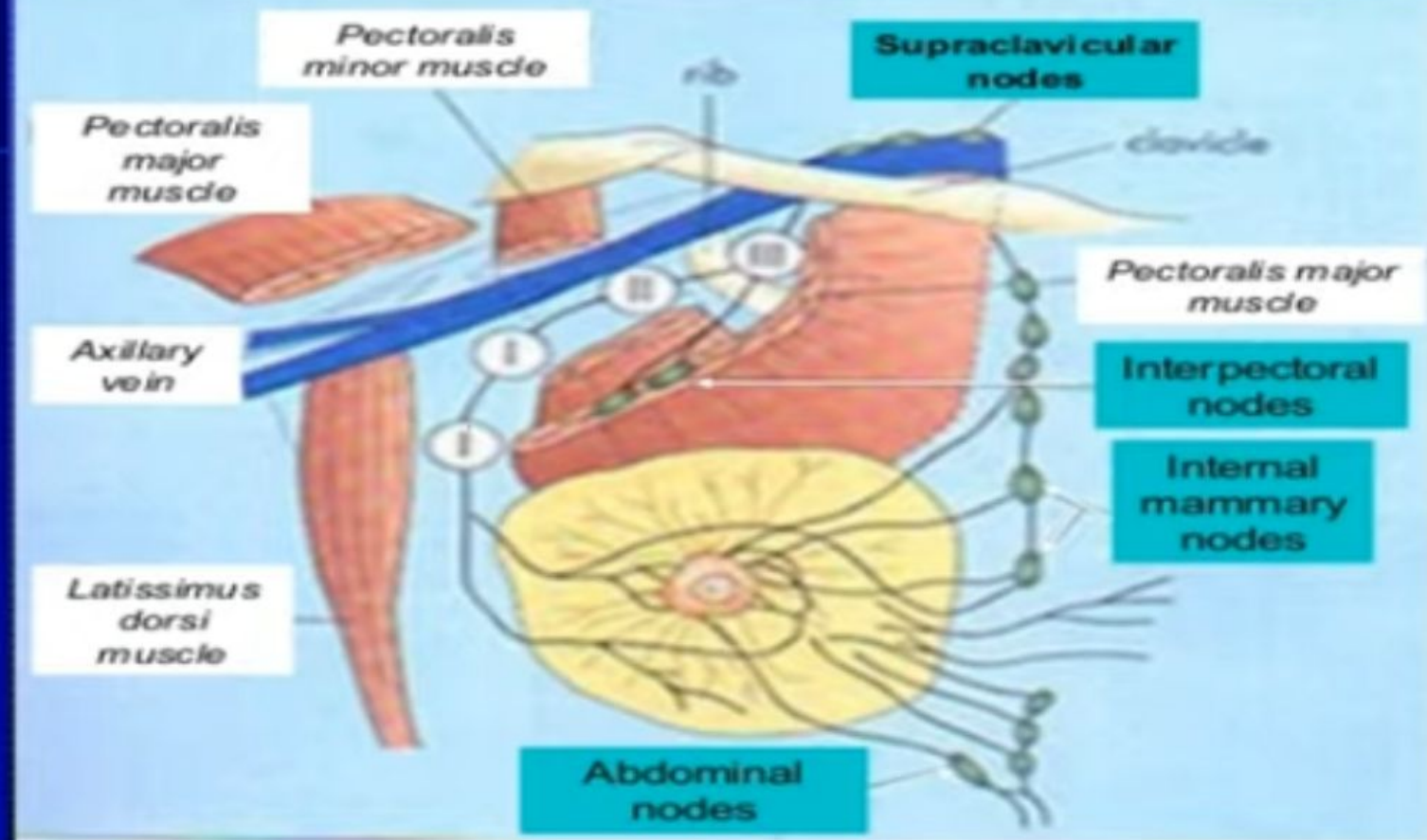


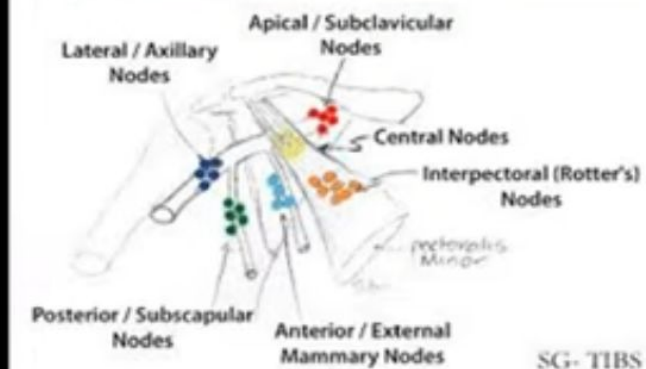
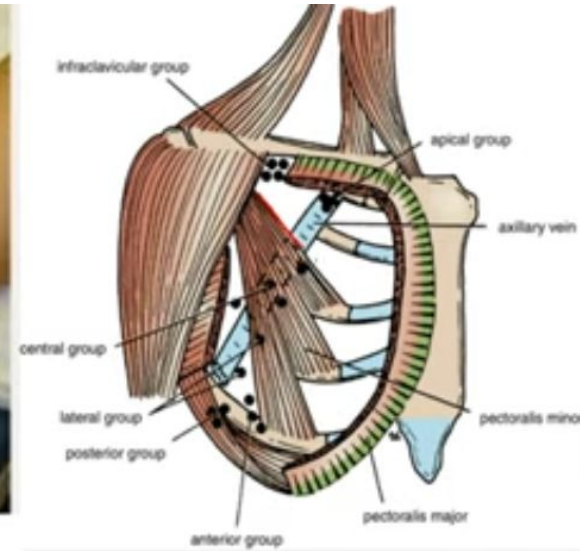
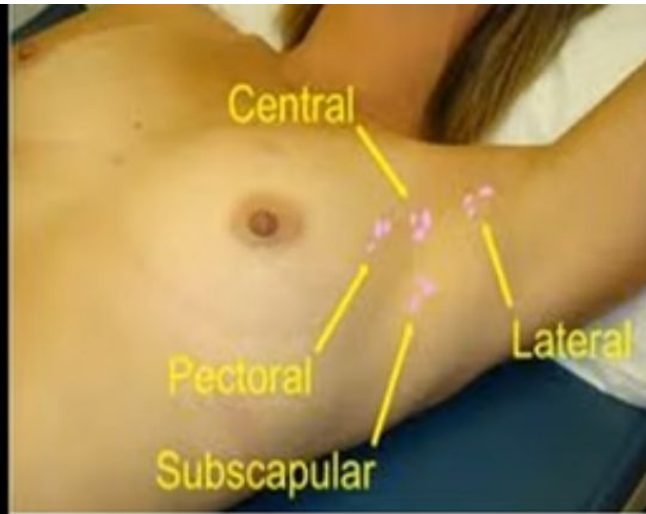




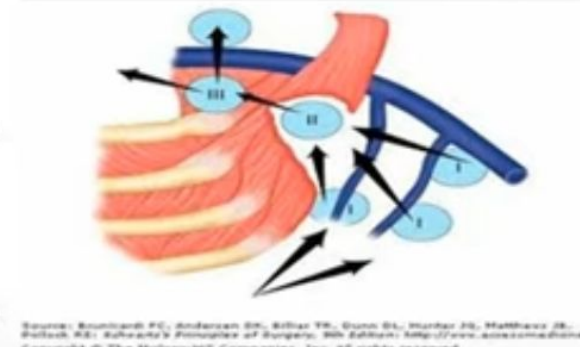
600 x 402

Levels of axillary nodes

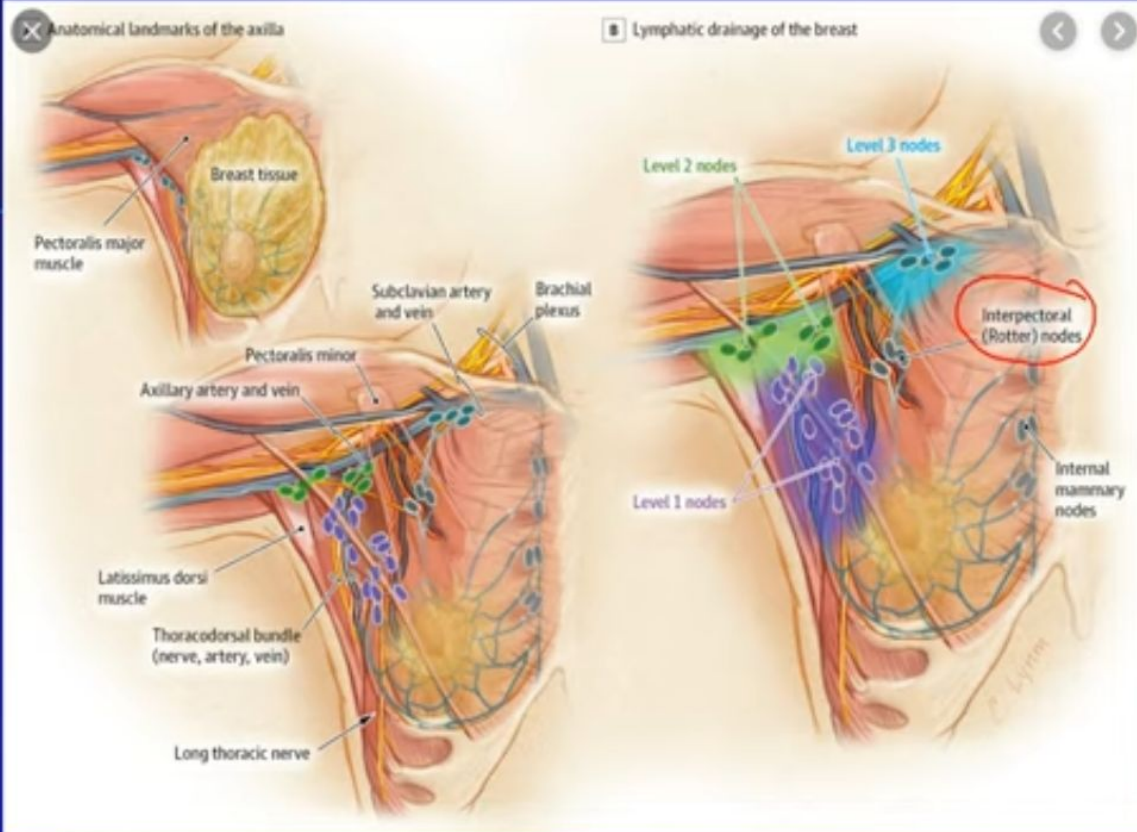




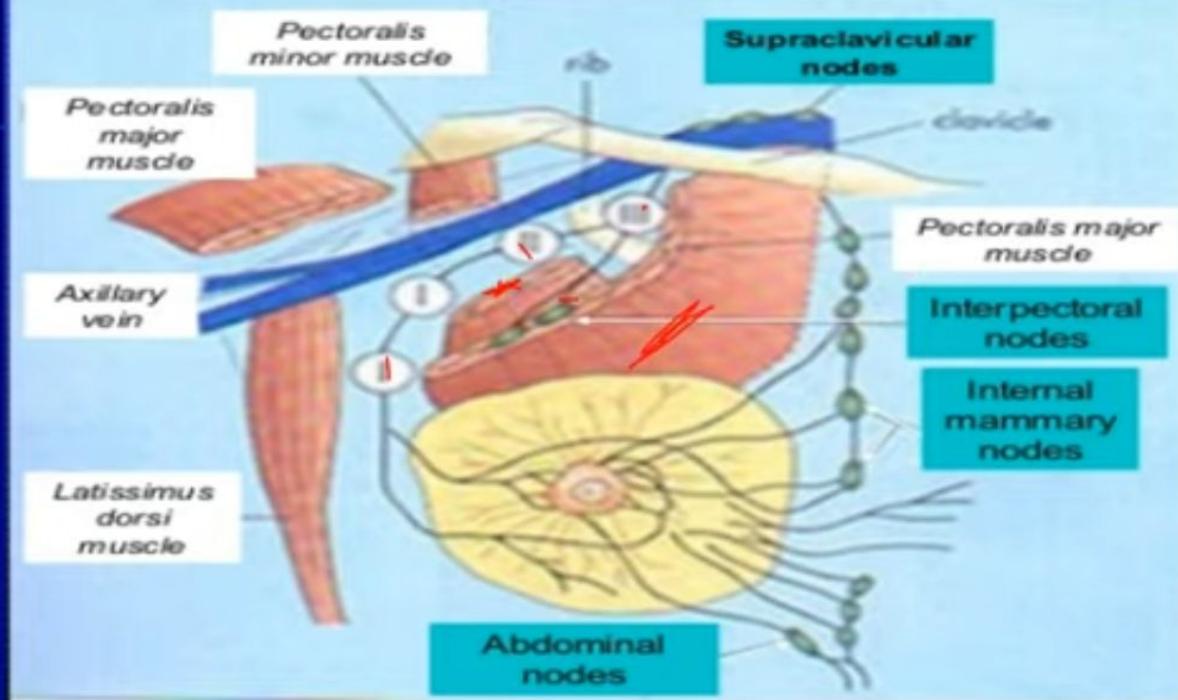
SG- TIBS



Source: Brunicelli PC, Anderson DR, Biller TK, Gross BL, Hunter JR, Matthews JB, Pollack AS. Schwartz's Principles of Surgery, 9th Edition. <http://www.accessmedicine.com>

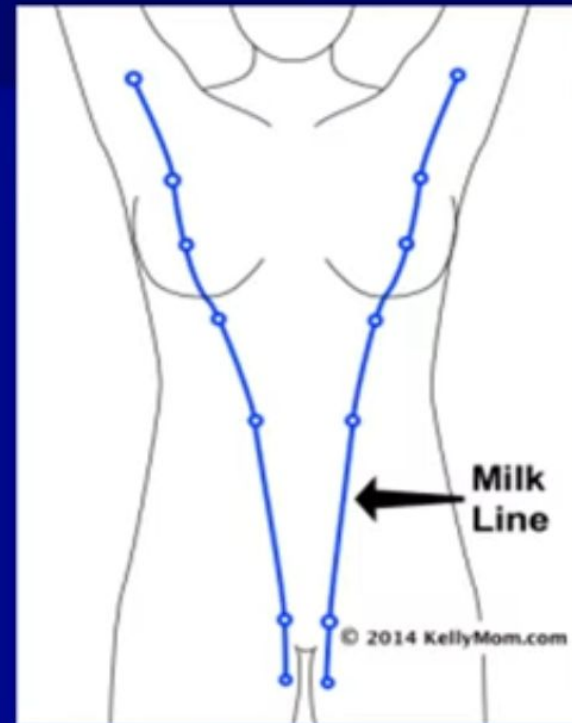


Levels of axillary nodes



Development of the breast

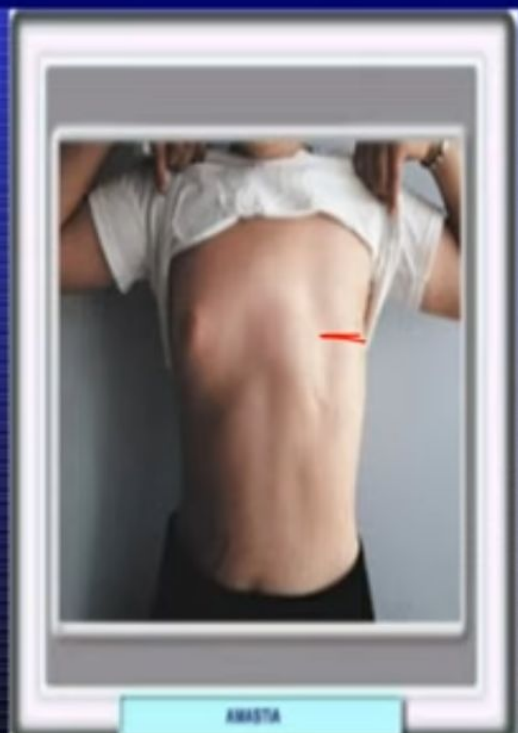
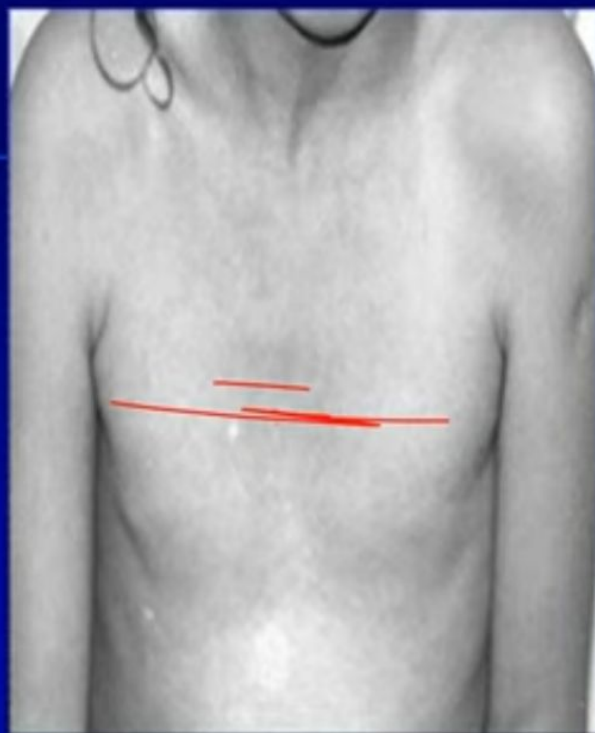
- Milk line.
- Polythelia
- Polymastia
- Gynaecomastia
- Micromastia
- Macromastia



Polymastia



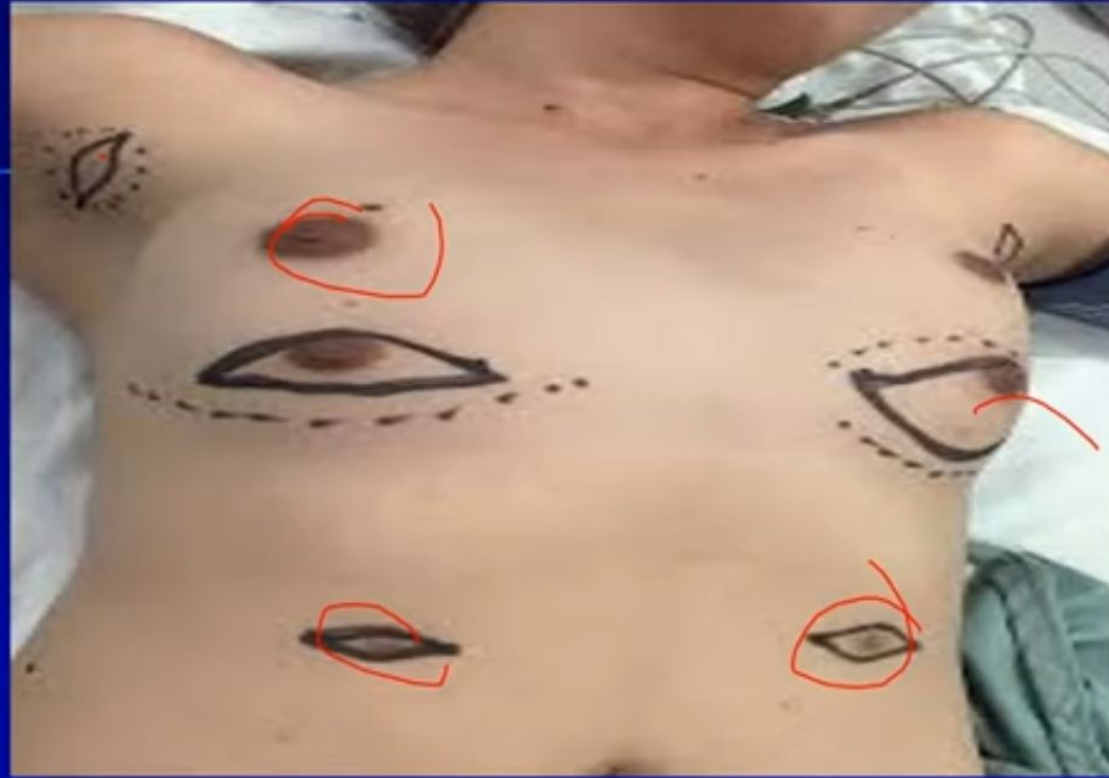




Amastia

Polythelia







Polymastia





Benign breast disease

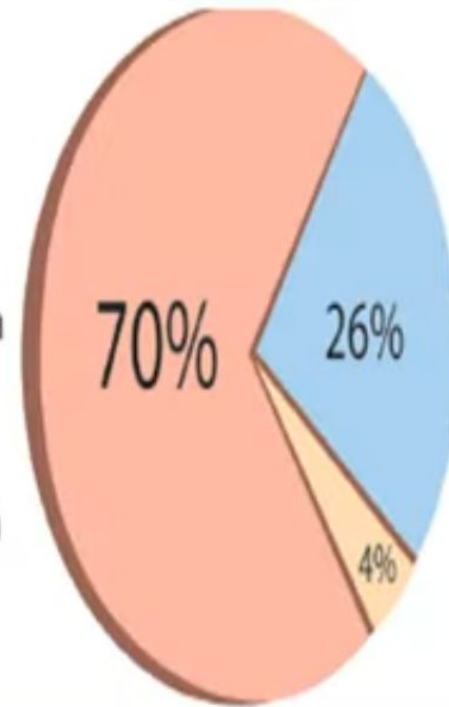
- Universal phenomenon among women.
- Half the female population will seek medical attention .
- 6-10% will have cancer.
- Aberrations of normal development and involution (ANDI).
- Very common occurrence , no clinical correlation .

Benign Breast Disease: Importance

70% of BBD diagnoses are **not** associated with an increased risk of breast cancer

26% of BBD diagnoses are associated with a **mildly** increased risk of breast cancer

4% of BBD diagnoses are associated with a **high** increased risk of breast cancer



Classification of benign breast disorder

Reproductive period	Normal process	BB disorder	BB Disease
Development <u>(15-25Y)</u>	Ductal , lobular development	Single duct obstruction fibro adenoma	Mammary duct fistula Giant form
Cyclic change <u>(25-40Y)</u>	Hormonal activity.	Nodularity, Mastalgia.	Severe form.
Pregnancy, lactation	Epithelial hyperplasia	Blood stained nipple discharge galactoceles	Ductal, lobular hyperplasia With atypia
Involution <u>(35-55) Y</u>	Ductal lobular Involution dilatation	Duct ectasia Cysts , Sclerosing	Peri-ductal mastitis

Table 17-2

(ANDI).

ANDI classification of benign breast disorders

	NORMAL	DISORDER	DISEASE
Early reproductive years (age 15–25 y)	Lobular development	Fibroadenoma	Giant fibroadenoma
	Stromal development	Adolescent hypertrophy	Gigantomastia
	Nipple eversion	Nipple inversion	Subareolar abscess
			Mammary duct fistula
Later reproductive years (age 25–40 y)	Cyclical changes of menstruation	Cyclical mastalgia	Incapacitating mastalgia
		Nodularity	
	Epithelial hyperplasia of pregnancy	Bloody nipple discharge	
Involution (age 35–55 y)	Lobular involution	Macrocysts	—
		Sclerosing lesions	
	Duct involution		
	Dilatation	Duct ectasia	Periductal mastitis
	Sclerosis	Nipple retraction	—
	Epithelial turnover	Epithelial hyperplasia	Epithelial hyperplasia with atypia

Classification of benign breast disorders

Nonproliferative disorders of the breast

- Cysts and apocrine metaplasia
- Duct ectasia
- Mild ductal epithelial hyperplasia
- Calcifications
- Fibroadenoma and related lesions

70% of ANDI

Proliferative breast disorders without atypia

- Sclerosing adenosis
- Radial and complex sclerosing lesions
- Ductal epithelial hyperplasia
- Intraductal papillomas

Atypical proliferative lesions

- Atypical lobular hyperplasia
- Atypical ductal hyperplasia

Cancer risk

No increase risk

- Duct ectasia.
- Mild epithelial hyperplasia .

Slightly increase risk (1.5-2)

- Moderate epithelial hyperplasia.

Moderate increase risk (4-5)

- Atypical Ductal and lobular hyperplasia.

High risk (8-10)

- Lobular carcinoma in situ.

Role of dietary factors

- **Deficiency of essential fatty acids.**
- **Low consumption of vegetables.**
- **Low vitamin A .**
- **Increase consumption of red meat.**
- **Higher levels of saturated fatty acids.**
- **Cigarette smoking .**
- **Alcoholic drinks .**

Recommendations for Evaluation of breast lump or change in breast texture



Can Identify the Cause in Most of Cases



SBE

Clinical examination **CBE** **Inspection** (Skin Changes)



Infiltration ulceration

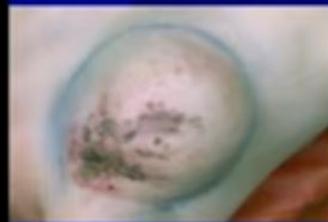


Figure 1: Left inflammatory breast cancer—can't wash it away with evidence of erythema.

Edema and peau d orange

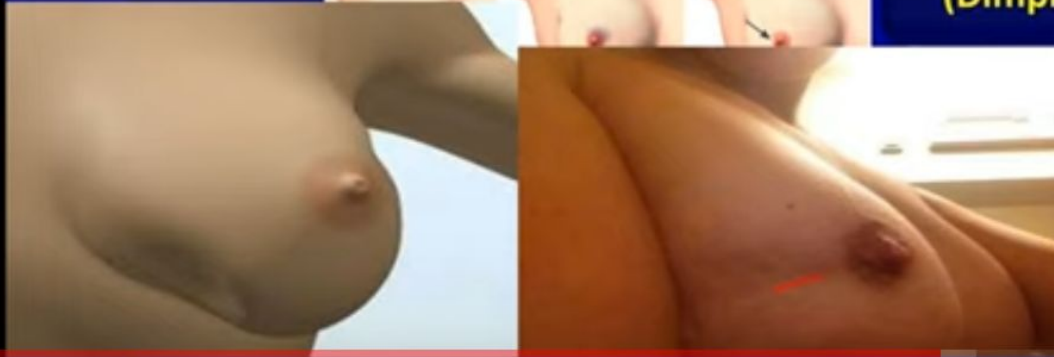
Clinical examination inspection (breasts)

breast |

**masses or
thickening in
breast**



- **Size (symmetry)**
- **breast shape (Dimpling)**



Dimpling seen by skin retraction



1:10 / 5:49



Clinical examination inspection (areola, Nipple changes)

**Change in
appearance of nipple**

- Inversion, (turning inward into the breast)
- retraction

Nipple changes



**Change in color
of nipple and
areola**

- Erythema,
- Erosion
- ulceration

Discharge



```
graph TD; A[Imaging techniques] --> B[Ultrasound]; A --> C[mammography]; A --> D[MRI]
```

**Imaging
techniques**

Ultrasound

mammography

MRI

**Mammography and
ultrasonography** are the
primary imaging studies for
evaluating palpable breast
masses.

Ultrasound is
the first or the
only test
ordered in
women under
age 30,

Mammography is
the first test
ordered in women
age 30 or older

MRI no role in
the workup of
a **palpable**
abnormality

Breast mass imaging Ultrasonography

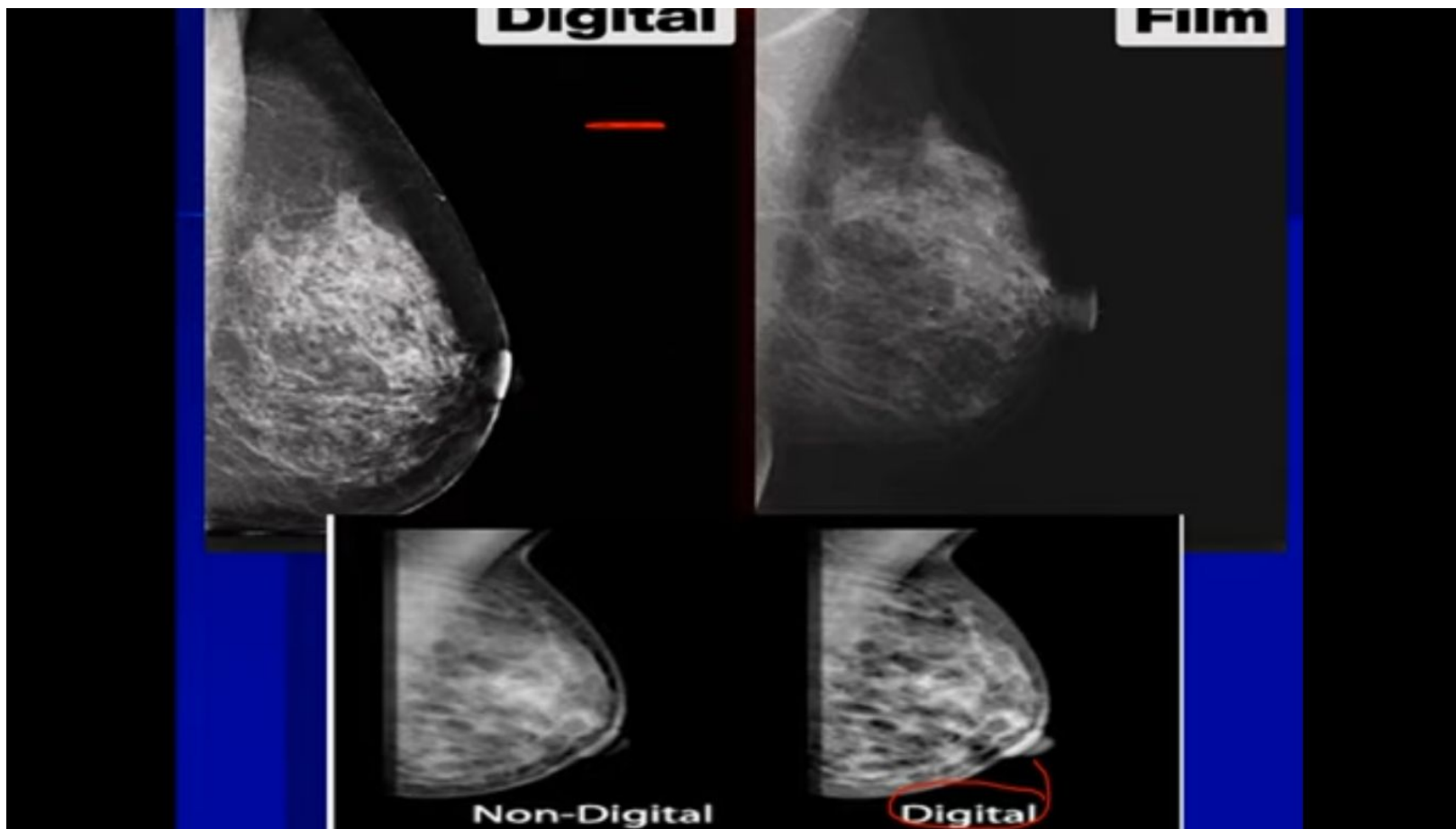
- A supplementary not primary screening modality.
- Increase Mammo Sensitivity 20-30%.
- Can distinguish Solid masses from Cystic lesions.
- May show an Irregular Mass within a cyst in the rare case of intra cystic carcinoma.
- More sensitive than mammography in detecting breast lesions in Young women with dense breast tissue.
- Does not reliably detect lesion that are $\leq 1\text{cm}$
- Can be used to Guide biopsy.
- A suspicious mass on ultrasonography classically appears “taller than wide” ,has Microlobulations and Irregular margin.

Breast mass imaging Mammography

- A low-dose x-ray Used

Digital Mammography

- No film or chemical processing.
- Produce images that can be displayed on a computer screen (similar to digital cameras) .
- **Much better image quality** and less artifact
- More accurate than traditional mammography
- Images easily sent over internet (telemammography)



Breast mass imaging

Mammography

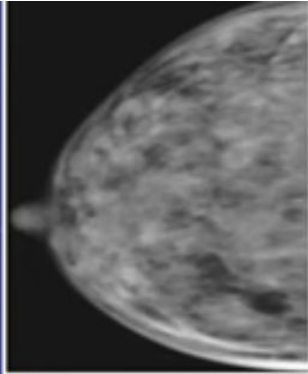
Screening mammography

- ❑ In asymptomatic pt.– no known breast problems
- ❑ Recommended annually for women over age 40
- ❑ Mammography can show changes in the breast up to two years before a physician can feel them
 ,20% relative risk reduction for breast cancer mortality most benefit in 60-69 y patient

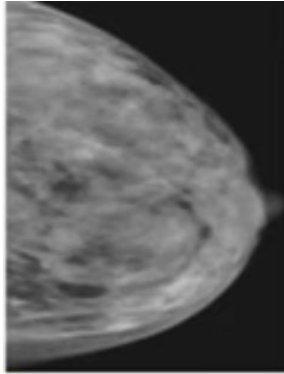
Breast mass imaging Mammography

Diagnostic Mammography

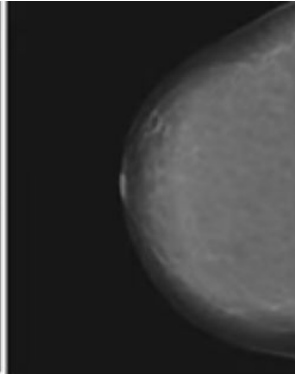
- ▶ For Pt > 40y with palpable mass or breast symptom .
- ❑ To evaluate for multifocal, multicentric & occult lesions in contralateral breast .
- ❑ A suspicious mammogram increase the probability of malignancy, but a normal mammogram cannot exclude a cancer .
- ❖ Delay mammogram 2 weeks after aspiration.



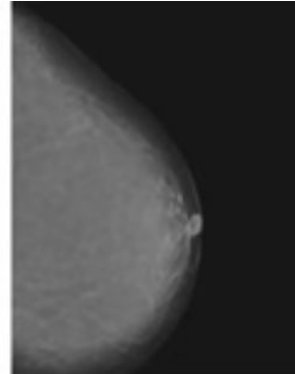
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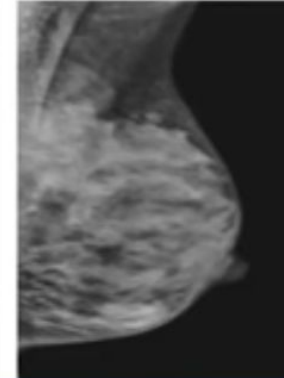
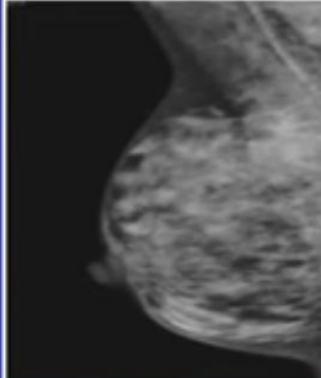
B



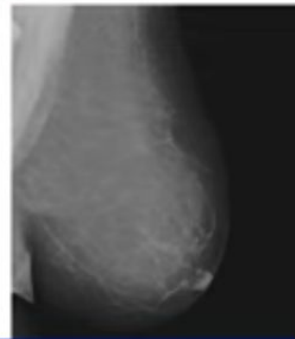
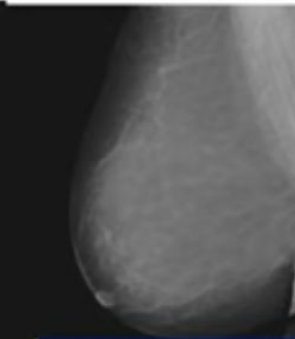
C



D



Premenopausal



Postmenopausal

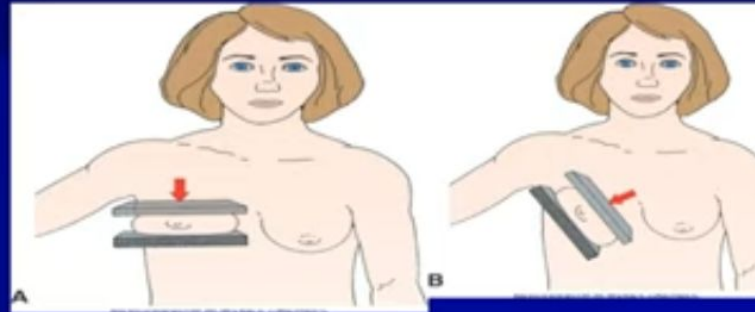
What Mammograms Show

Mammographic Features of Breast Cancer:

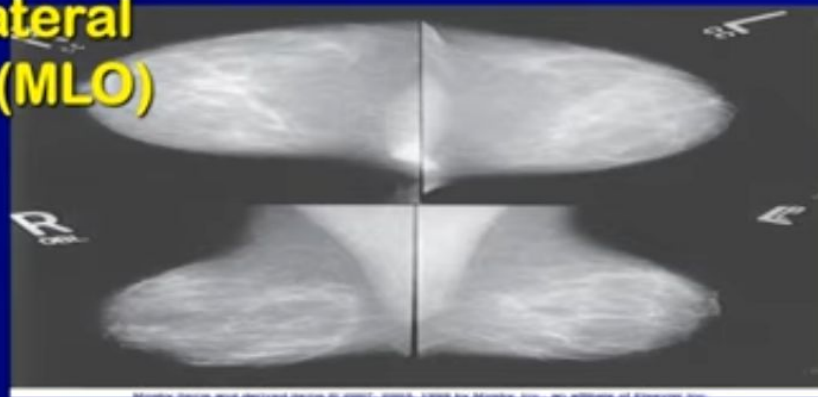
- ❑ Asymmetry
- ❑ Architectural distortion
- ❑ Areas of skin thickening
- ❑ Mass
- ❑ Micro-calcifications

Routine mammography Views

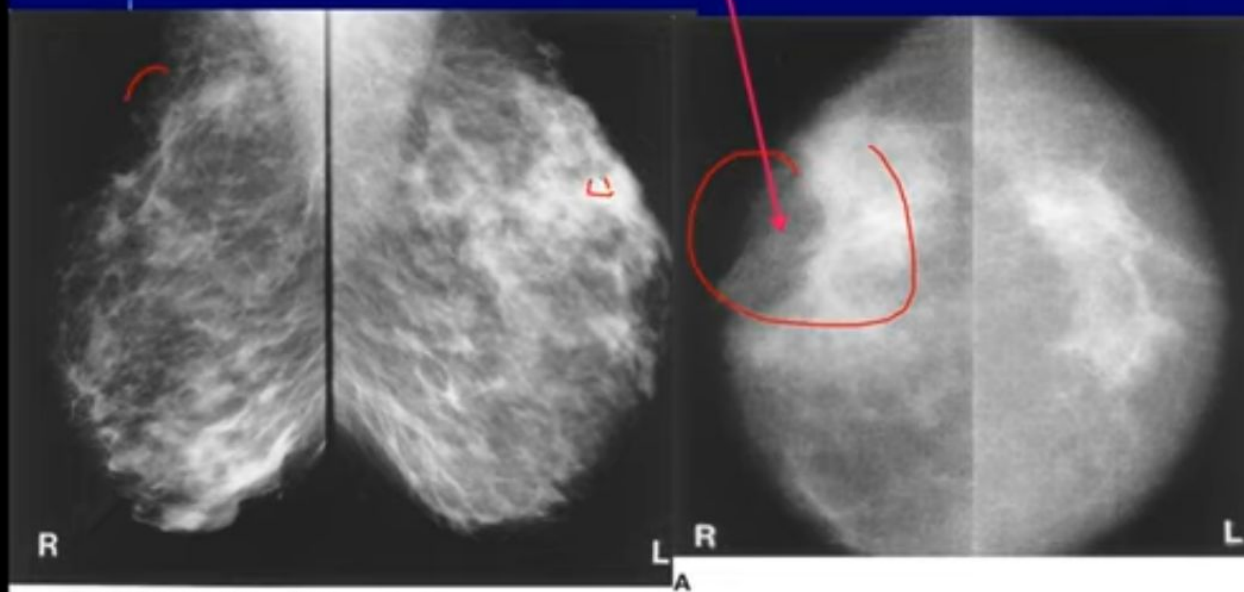
I. Cranio-caudal (CC)



II. Medio-lateral oblique (MLO)



Asymmetry Architectural Distortion



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Masses

Malignant



Benign

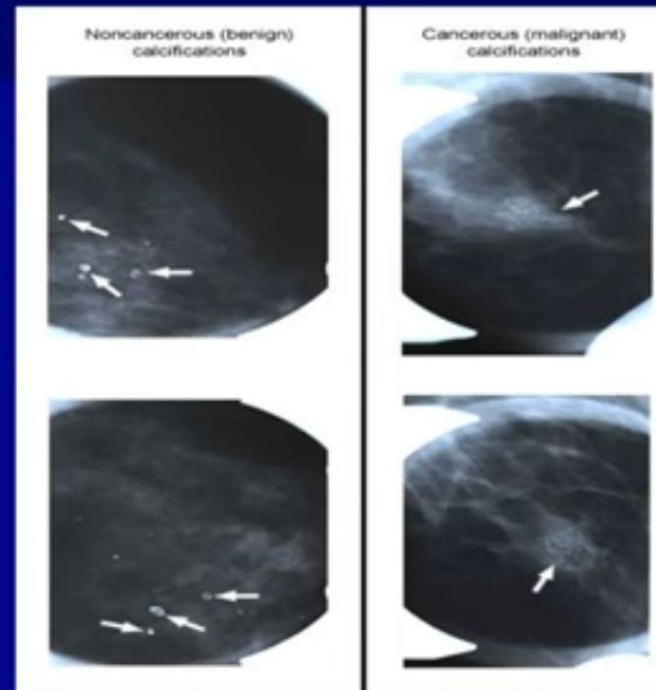


Malignant mass has an irregular shape with spiculated margins.

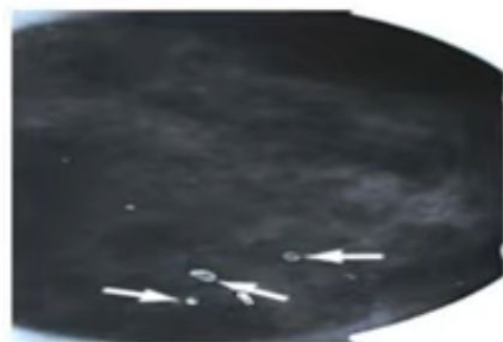
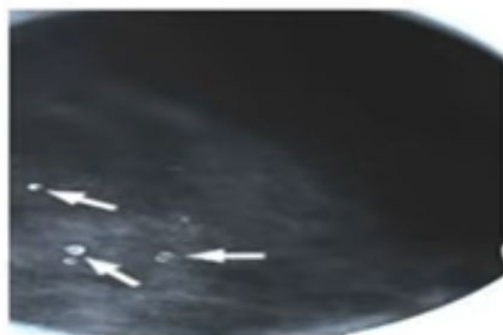
Benign mass typically has a round shape with well-circumscribed margins.

Breast Calcifications

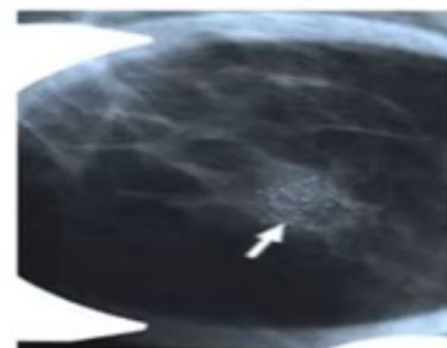
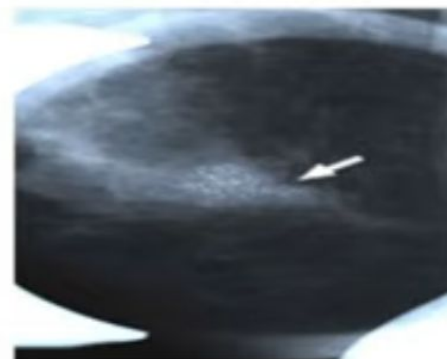
- ❑ fine, stippled calcium in and around a suspicious lesion
- ❑ Normal with age
 - round well-defined, larger calcifications, > 2mm are more likely benign
 - Tight cluster of fine (<1mm) sandlike, irregularly shaped microcalcifications may indicate cancer



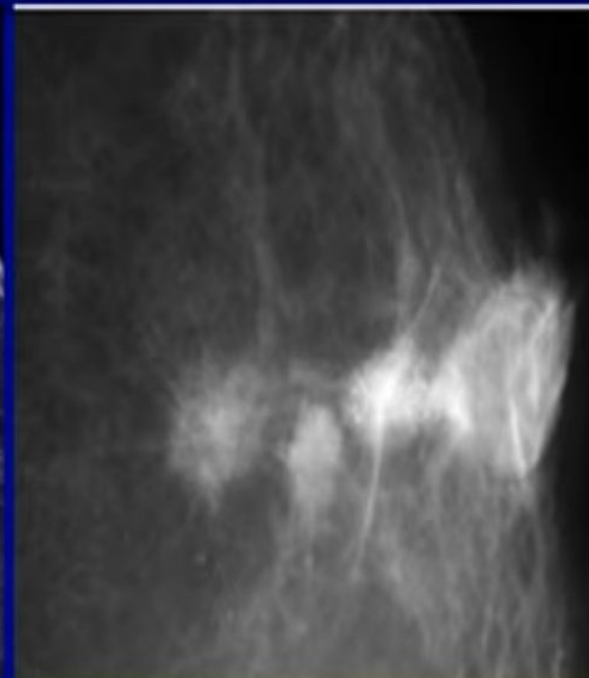
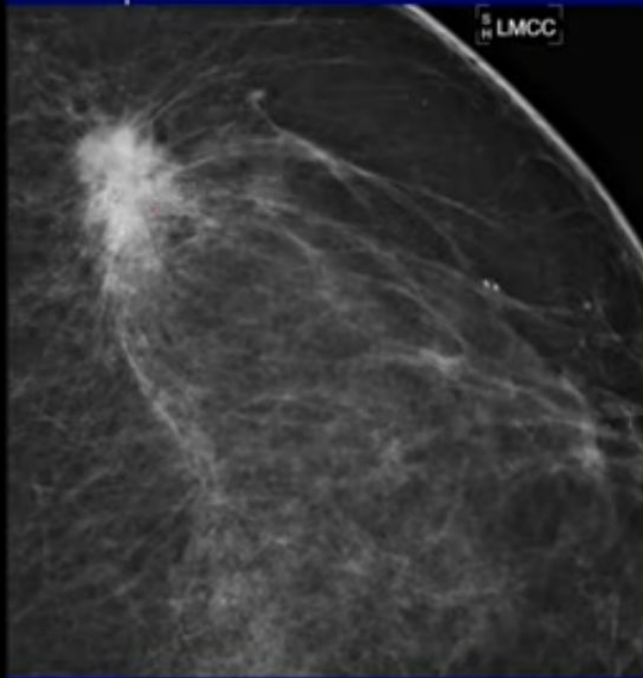
Noncancerous (benign)
calcifications



Cancerous (malignant)
calcifications



Microcalcification



BIRADS

Final Assessment Categories			
	Category	Management	Likelihood of cancer
0	Need additional imaging or prior examinations	Recall for additional imaging and/or await prior examinations	n/a
1	Negative	Routine screening	Essentially 0%
2	Benign	Routine screening	Essentially 0%
3	Probably Benign	Short interval-follow-up (6 month) or continued	>0 % but ≤ 2%
4	Suspicious	Tissue diagnosis	4a. low suspicion for malignancy (>2% to ≤ 10%) 4b. moderate suspicion for malignancy (>10% to ≤ 50%) 4c. high suspicion for malignancy (>50% to <95%)
5	Highly suggestive of malignancy	Tissue diagnosis	≥95%
6	Known biopsy-proven	Surgical excision when clinical appropriate	n/a

BIRADS

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Fibroadenoma

- Young women 15-25 year
- Rubbery, firm, smooth, mobile lump .
- Usually 1-2cm , arise from lobules .
- They can be mildly symptomatic tenderness or pain worse at the time of menstruation .
- Risk of cancer is 0.1% .
- Conservative treatment < 3cm .
- Excision: if large , Rapid increase in size .
and a in women above 40 year.
- 30% will disappear spontaneously.
- Giant fibro-adenoma >5cm
- juvenile fibro-adenoma.

Mastalgia

- 70% of female will experience breast pain.
- Cyclic in two thirds , non cyclic in the rest .
- Unilateral , bilateral, multi-centric , multifocal.
- Only 7% of breast cancer present with pain.
- Cyclic Mastalgia start at 34y relieved by menopause exercise increase pain.
- Non cyclic Mastalgia start at older age 43y in chest wall or breast itself.
-

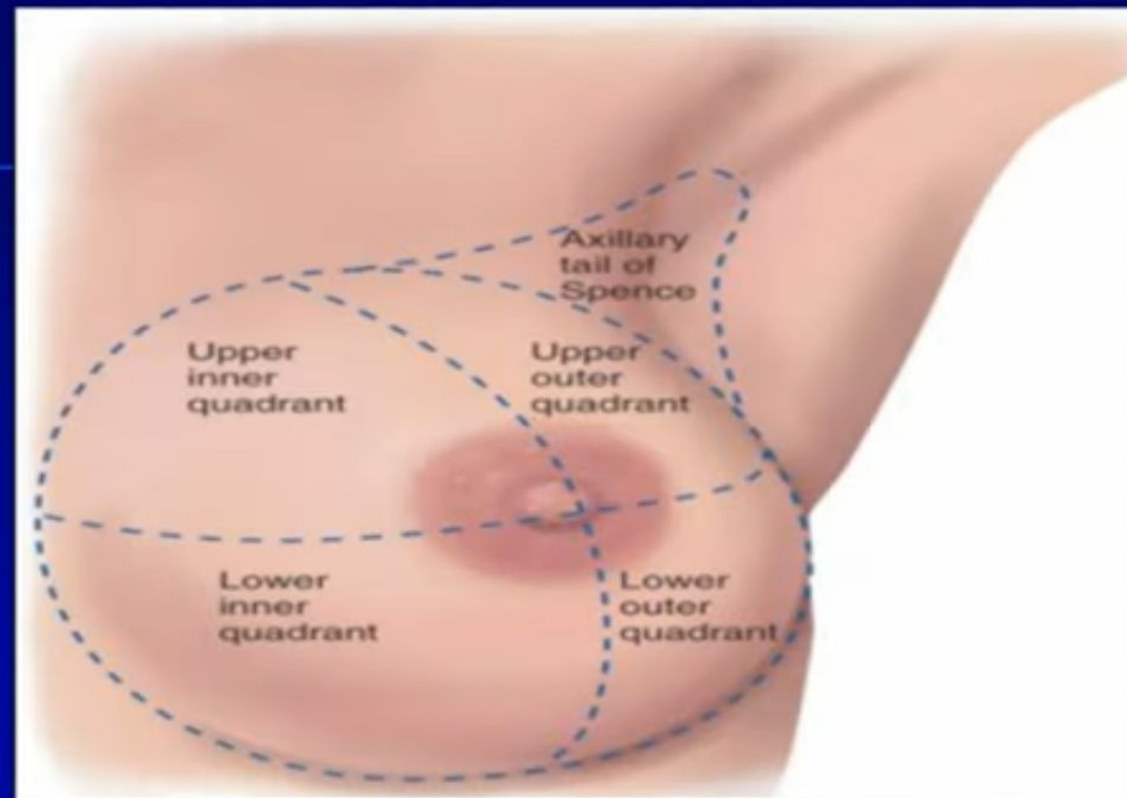
Diagnosis of breast pain

Physiological

- Bilateral
- Symmetrical
- Cyclic
- Diffuse
- Upper outer quadrant
- Radiate to axilla

Pathological

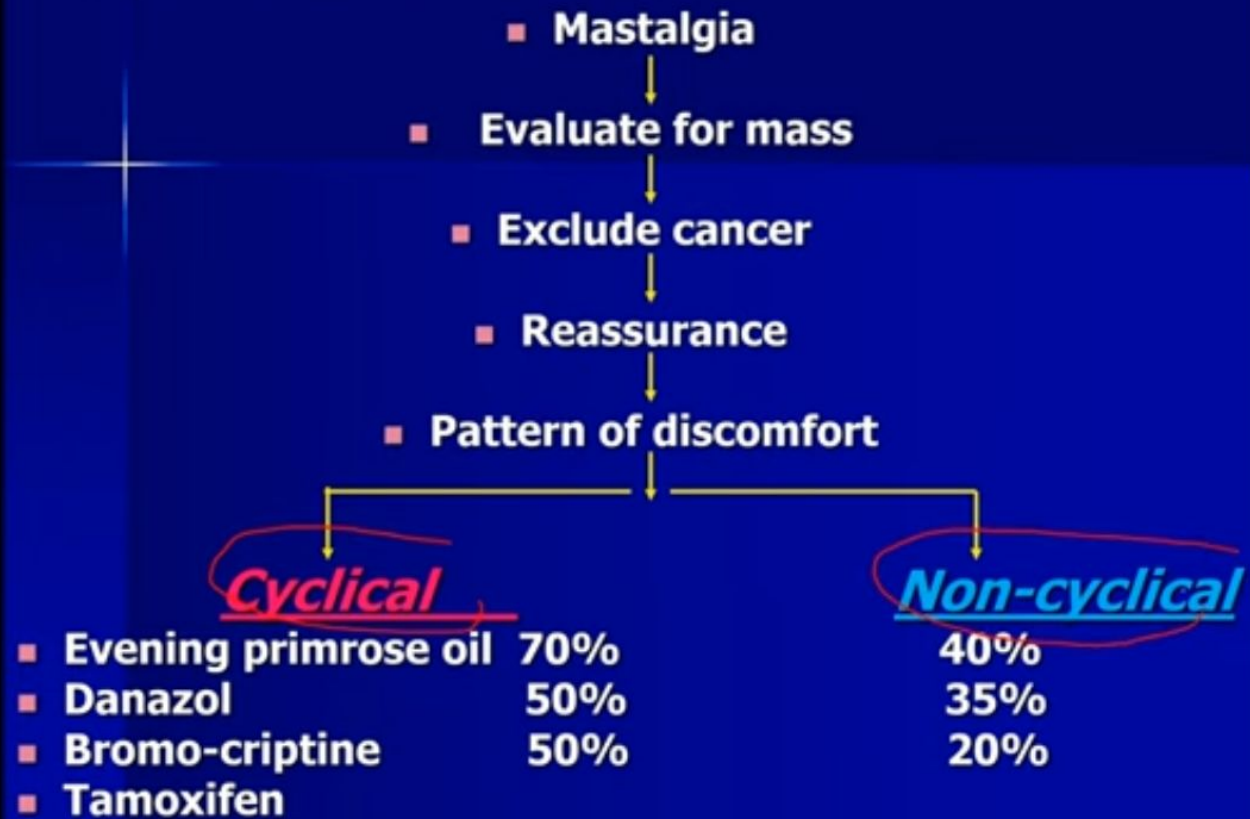
- ♦ Unilateral
- ♦ Asymmetrical
- ♦ Non cyclic
- ♦ Focal
- ♦ Any quadrant
- ♦ No radiation



Mastalgia CONT

- **Avoid caffeine.**
- **Decrease fat intake and chocolates.**
- **Will fitting bra.**
- **Stop HRT.**
- **Stop smoking, exercise.**
- **Increase vegetables and carrots.**
- **Hot compressors.**
- **NSAIDS topical and systemic.**
- **Vitamin E 400 U/day.**
- **Evening primrose oil.**
- **Tamoxifen 20mg/day for 3 month**

Medical treatment



Breast cyst

- palpable cyst develops in at least 1 in every 14 women.
- 50% of cysts are multiple or recurrent .
- Cysts are influenced by ovarian hormones .
- Cysts occur 35% in women 35-50 years.
- Diagnosis: US Simple or complex cyst.
- Treatment: Aspiration if large
 - No residual cyst .
 - Discharge not bloody .
 - No debris
 - Does not recures twice .

Discharge

Breast cysts

- **Cysts of ANDI (38-53 year)**
- **Galactoceles.**
- **Oil cyst of fat necrosis**
- **Papillary cystadenoma**
- **Phyllodes tumor**
- **Hydatid cyst**

Which cyst showed be removed

- Large cyst > 4cm
- Recurrent fluid after two aspirations.
- Blood stained aspirate
- Residual lump after aspiration (Complex)

Epithelial hyperplasia

- Mild, moderate ,severe.
- Atypia with hyperplasia increase cancer risk.

Nipple discharge

- 2/3rd of women express some fluid

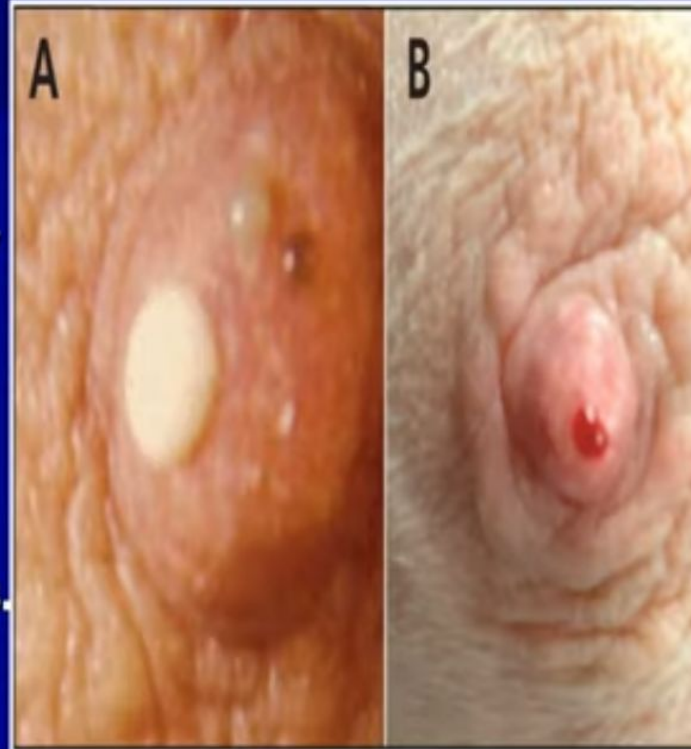
N.B Fluid Should Never Be Blood Stained

- Watery, serous, bloody ,opalescent.
- Single or multiple ducts
- Colorless , yellow, green.
- Hyper-prolactinaemia.
- Duct papilloma.
- Duct ectasia.

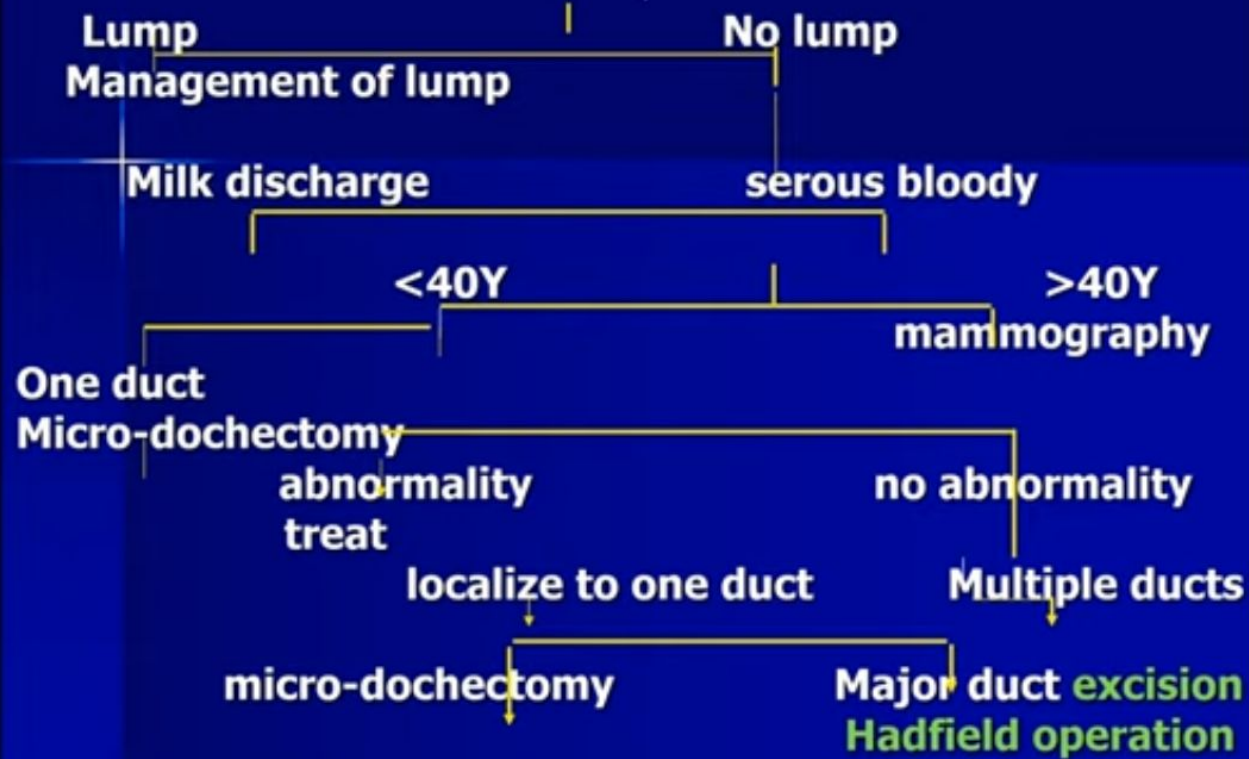


Physiological nipple discharge

- Both breasts.
- Green yellow ,milky color.
- Multiple ducts.
- Not spontaneous
- Occult blood - ve.
- No underlying mass.
- Cytological - ve.



Management of nipple discharge



Duct ectasia / Periductal mastitis

- **Definition:** Dilatation of lactiferous duct due to muscular relaxation of its wall , with periductal mastitis .
- Late premenopausal.
- Affect major breast ducts (3-4).
- Mastalgia of non-cyclic nature under areola.
- Nipple discharge (greenish) from more than one duct .
- Periareolar inflammation and fibrosis
- Anaerobic bacteria, Antibiotics?
- **Treatment : Total Major Duct Excision**
(Hadfield Operation)

Duct papilloma

• Solitary papilloma

• Major duct

• Bleeding per nipple

• Underlying lump?

• Treatment: Microdochectomy



Nipple Rash

- Unilateral
- Excoriating
- Ulcerating
- Crusting
- Itchy

Paget's disease of breast

- Incisional biopsy



Paget's disease of breast

Paget's disease of breast

Rare form of breast cancer 1-4%.

Usually start in the nipple.

Underlying breast cancer in more than 97% of cases.

Unilateral excoriating, ulcerating, crusting lesion , reddish , itchy lesion .

Nipple biopsy allows doctors to correctly diagnose Paget disease of the breast.

Slightly more aggressive than ordinary breast cancer.

Usually is treated by simple mastectomy .

Comparison

Paget's disease	Eczema
Unilateral	Bilateral
Progressive, continuous	Intermittent
Moist, or dry	Moist
Regular, discrete	Indistinct
Nipple always involved	Nipple sparing
Pruritis is not common	Pruritis present



Breast Infections and Abscess

Sub areolar mastitis: *Infected gland of Montgomery .*

Retention cyst of a gland of Montgomery

- These glands, situated in the areola, secrete sebum and if they become blocked a sebaceous cyst forms.



• **Lactational breast abscess:**

Arise from entry of bacteria through the nipple into the duct system and are characterized by fever, leucocytosis, erythema, and tenderness.

Uni-organism: Staph aureus. Usually during first 6 weeks of lactation or during weaning, in glandular tissue.

Mastitis : inflammation and swelling.

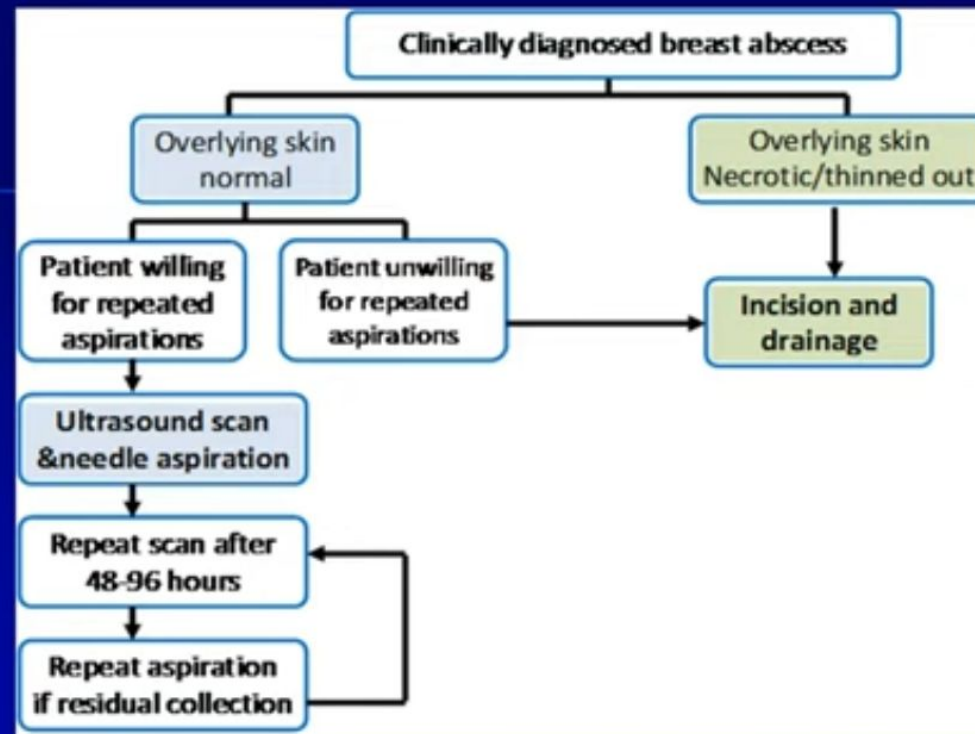
Treatment : Aspiration & antibiotics If failed I&D



Non-lactational breast abscess:

- chronic sub-areolar infections associated with duct ectasia or peri-ductal mastitis.
- Mean Age 32 Y.
- Smoking and diabetes is common.
- The infections are most often Mixed Organisms that include aerobic and anaerobic skin flora.
- Warm soaks and oral antibiotics may be effective treatment at this stage.
- Aspiration and I&D Late cases Hadfield's operation.





Breast Abscess



Breast abscess
with early skin
necrosis



Lactational breast abscess



Nonlactational breast abscess



Breast abscess aspiration





https://www.youtube.com/watch?list=PL4auXAZiXjrUfadm6iZJQOhW9slw52e5R&v=WR6QXS7c5_s



https://www.youtube.com/watch?list=PL4auXAZiXjrUfadm6iZJQOhW9slw52e5R&v=WR6QXS7c5_s

Phyllodes Tumor (Cysto-Sarcoma Phyllodes)

- A Phyllodes tumor, is a *Rare Breast Tumor* usually affecting pre-menopausal women in their late 40's.
- PT can either be benign 60%, suspicious of malignancy or overtly malignant 10%.
- Breast PT account for about 2-3 % of all breast neoplasms .
- A combination of stromal and epithelial cellular elements form the Phyllodes tumor.
- Very fast-growing, and can increase in size in just a few weeks .
- 15 Y older than Fibro-Adenomas .
- Treatment: Wide local excision recurrence rate 30%.



Gynecomastia

- Enlargement of male breast.
- Physiologic Gynecomastia usually occurs during three phases of life .
- AT Puberty, condition often Unilateral 13-15Y , in Elderly it is Bilateral.
- Causes
- Hormonal imbalance at puberty.
- Liver Cirrhosis .
- Testicular tumors , lung cancer HCC .
- Senility.
- Drugs .



BEFORE

AFTER

Grades of Gynecomastia



Rohrich grading system*

Grade I	Minimal hypertrophy (250g of breast tissue) without ptosis. A. Primarily glandular B. Primarily fibrous
Grade II	Moderate hypertrophy (250–500g of breast tissue) without ptosis. A. Primarily glandular B. Primarily fibrous
Grade III	Severe hypertrophy (500 g of breast tissue) with Grade I ptosis. Glandular or fibrous
Grade IV	Severe hypertrophy with Grade II or III ptosis. Glandular or fibrous





Treatment

breast II 

- **Treat the cause.**
- **Conservative treatment(Spontaneous regression) .**
- **Subcutaneous mastectomy.**
- **Liposuction.**



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