



Breast Diseases

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Color Index:

 Important

 Doctor's Notes

 Extra

 Davidson's

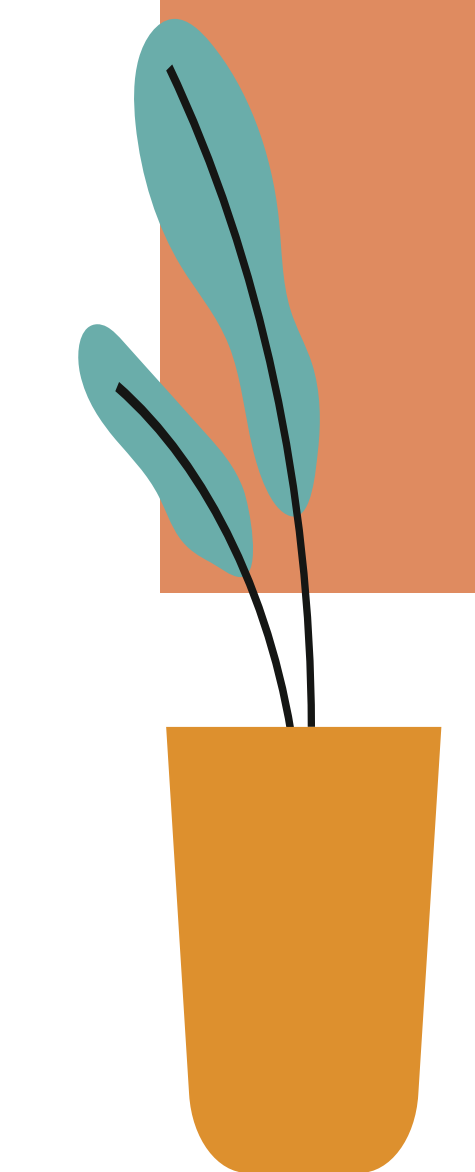
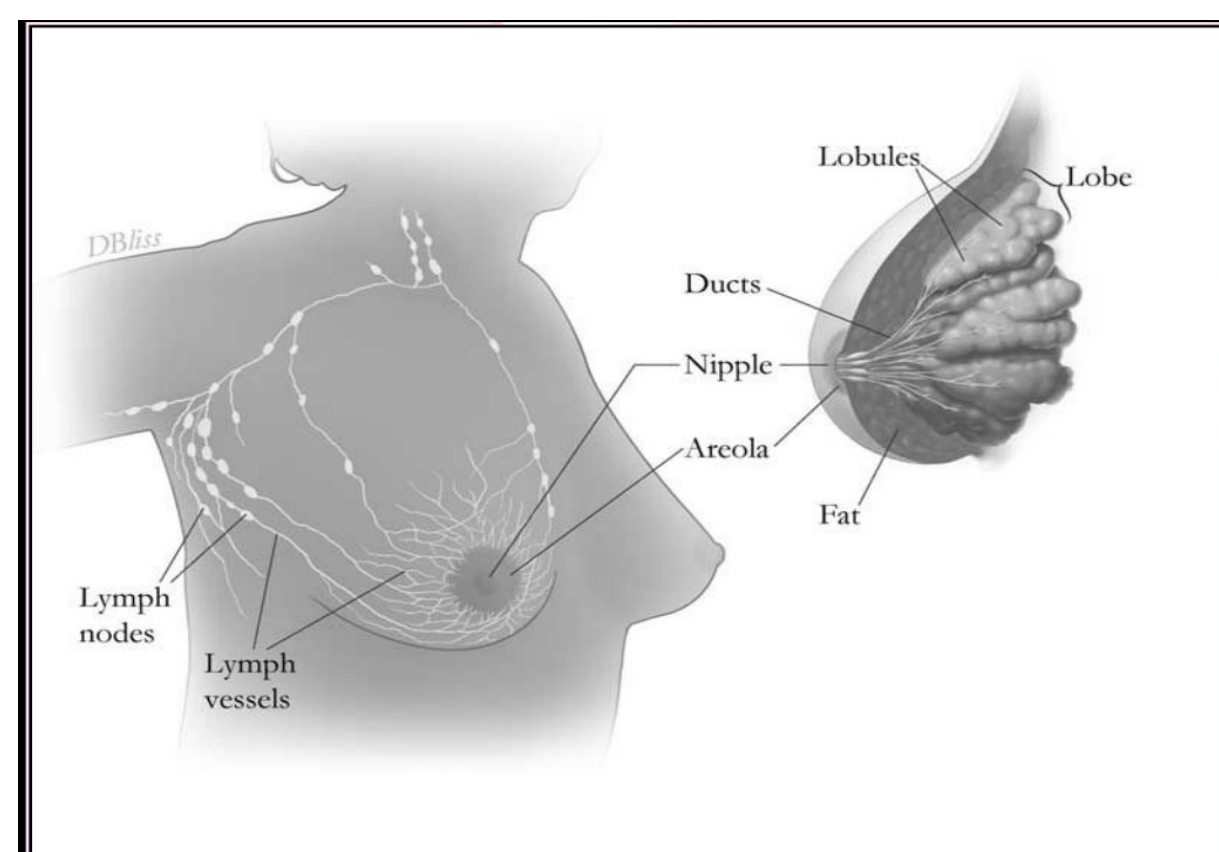
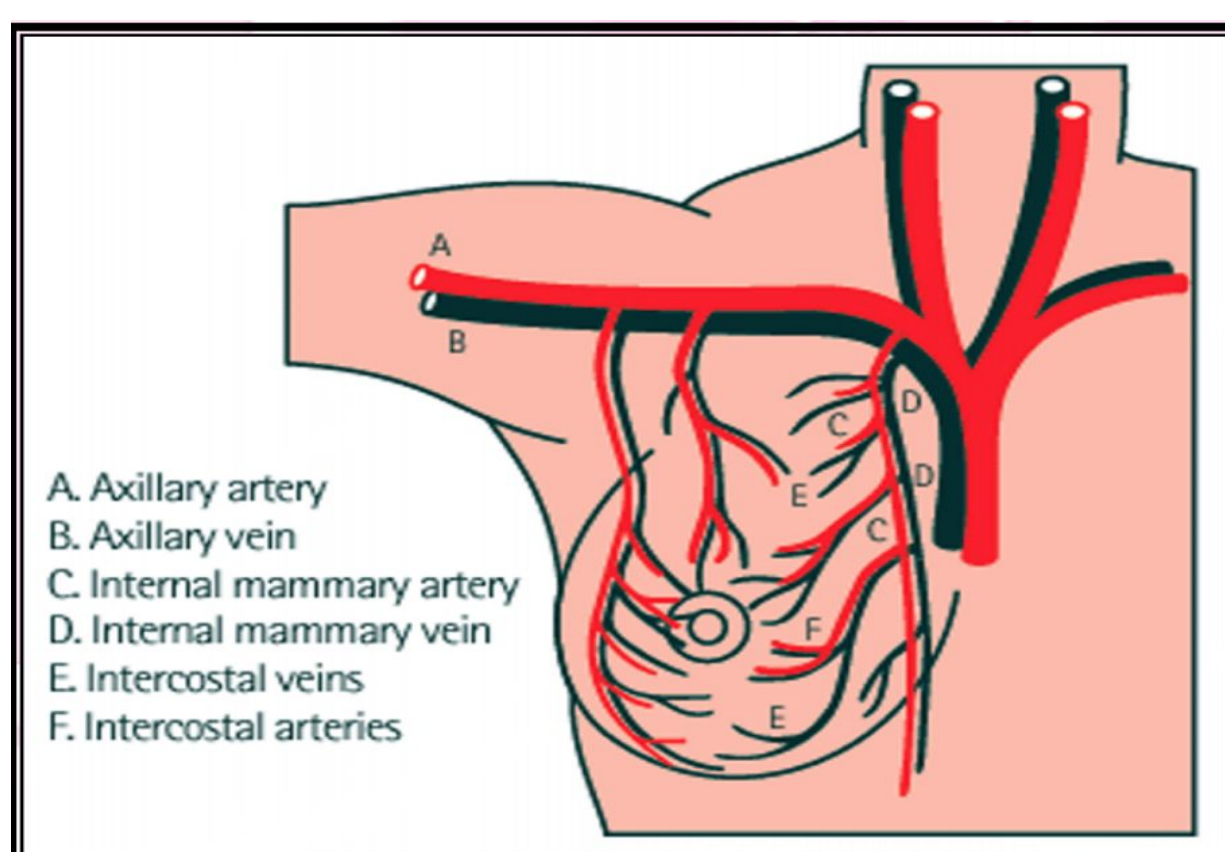
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The Breast

Anatomy

- Modified sweat gland.
 - 2-6 ribs, side of sternum to mid-axillary line.
 - Sets on:
 - Pec. Major 60%
 - Serratus anterior 30%
 - Rectus sheath 10%
 - 15-20 lobules separated by fibrous septa (Cooper's ligaments).
 - Axillary tail of spence.
 - **Blood supply:**
 - Lateral thoracic and acromiothoracic branch of axillary artery.
 - Internal mammary artery
 - Intercostal aa.
 - **Lymphatic drainage:** (most important bc it's well connected to breast cancer)
 - Groups of lymph nodes:
 1. Anterior: deep to pectoralis major.
 2. Posterior: along subscapular vessels.
 3. Lateral: along the axillary vein.
 4. Central: in axillary pad of fat.
 5. Apical: drains the above, behind clavicle at apex of axilla.
 - 90% of breast lymph nodes lie in the axilla where 10% is supraclavicular or intramammary
 - Clinical classification of Axillary lymph nodes:
 - Level 1: below the pectoralis minor muscle (majority)
 - Level 2: hide behind the pectoralis minor muscle
 - Level 3: higher to the pectoralis minor muscle
- In relation to pec. minor
- Women come to see a breast surgeon because of one of the followings
 1. Breast lump (painful or painless) 60%
 2. Breast pain without lump 10%
 3. Nipple discharge 5%
 4. Change in breast contour 2%
 5. Nipple - areolar complex disorder 1%
 6. Axillary mass 1%
 7. Screen detected lesion 1%
 8. Anxiety 20% every 5th patient comes bc of anxiety only



Clinical Approach

History

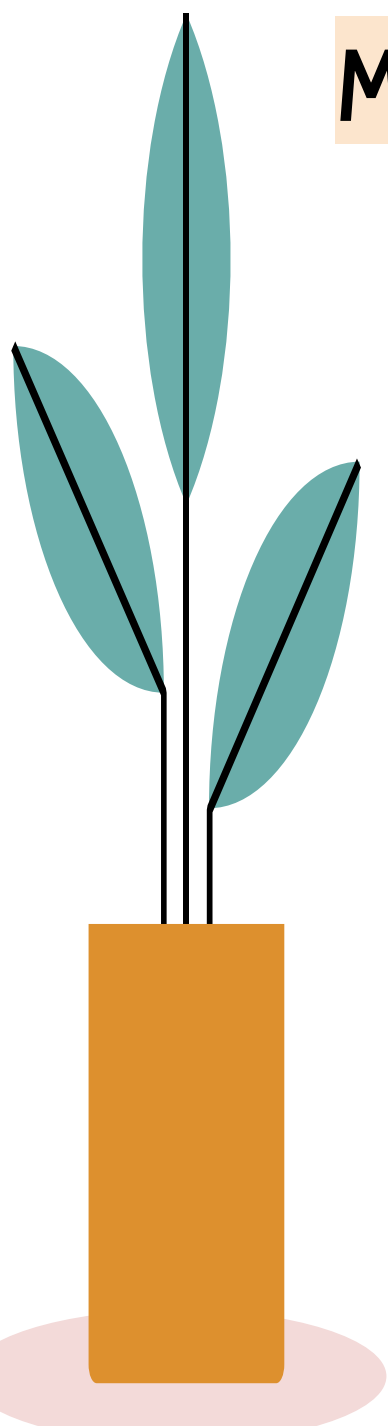
- Full & complete history should be taken, particular attention should be paid to:
- Breast development starting from childhood to present.
 - Endocrine status of patient mainly menstruation and OCP
 - Premenopause vs perimenopause (menopausal transition) vs postmenopause
 - Size of lump in relation to menses.
 - Pattern of pain in relation to menses
 - How regular the cycle is and quantity of blood.
 - Changes in breast during previous pregnancies e.g. abscess, nipple discharge, retraction of nipple.
 - Number of pregnancies.
 - Breast feeding (more than 6 months or less) breastfeeding for more than 6 month adds more protection against both breast and ovarian cancer.
 - Abnormalities which took place during previous lactation period e.g. abscesses, nipple retraction, milk retention (infection)
 - Family history of breast diseases especially cancer & particularly in near relatives.
 - Nipple discharge.
 - Age at menarche.
 - Age at 1st birth.
 - Last menstrual period
 - For postmenopausal women: hormonal replacement therapy & date of menopause

Clinical Examination

1. Always compare both breasts bc its very rare to have the same disease in both breasts
2. Disrobed from waist and above.
3. Examine in sitting and supine position and 45° position.
 - a. we examine the patient in 2 positions bc some masses don't appear
4. Inspection with arms by the side and above head: size, symmetry, skin changes, & nipple complex.
5. Examine normal side first.
6. Examine axilla, arm, SCF for lymphedema
7. Examine abdomen for organomegaly
8. Examine the back for bony tenderness

Management of Patients with a Breast Lump:

1. History
2. Examination
3. Ultrasound < 40 yo bc the breast tissue is very dense thus mammogram is useless
4. Mammogram if above 35 yrs
5. MRI if the breast is very dense e.g. in silicon prosthesis
6. FNAC → tells you the diagnosis (benign or malignant lesion)
7. Core biopsy → give more details about the mass
8. Excision biopsy
9. Definitive treatment which is either:
 - Observation
 - Excision
 - If malignant, along the lines of cancer cases
10. Triple assessment:
 - H & P - Mammogram (99%) - F.N.A.

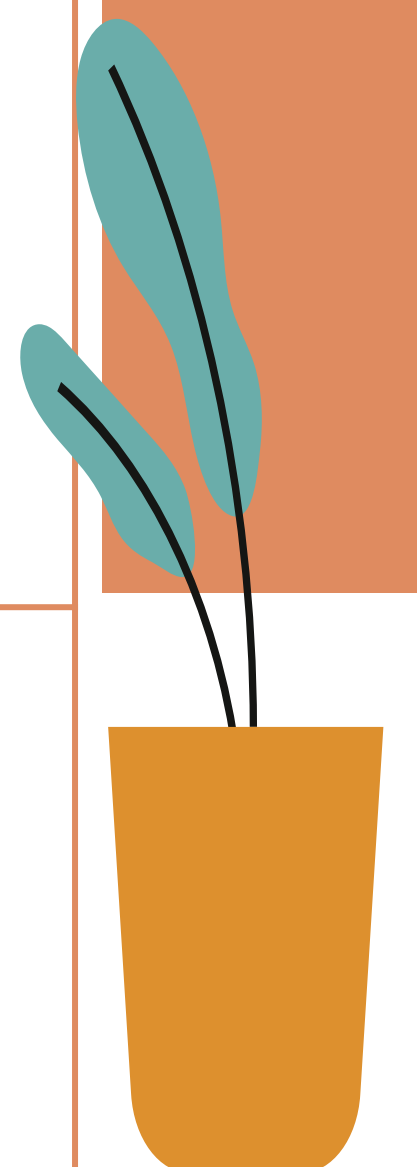


Techniques Available for Investigations

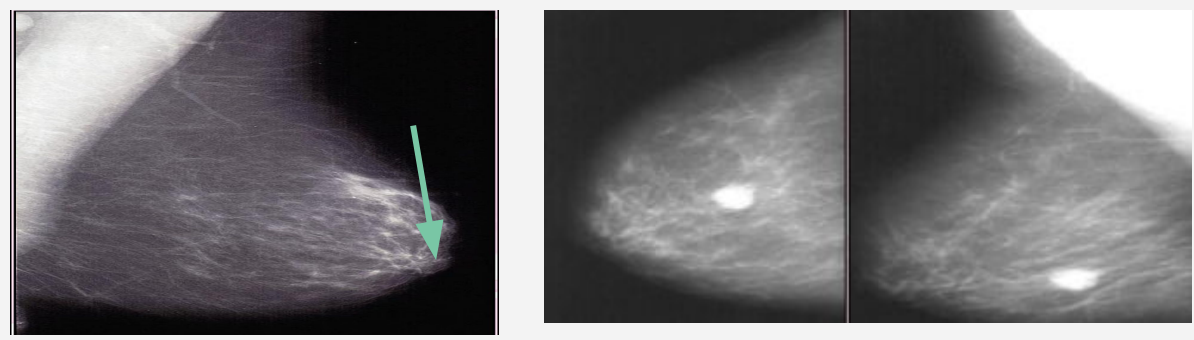
- ★ Clinical examination.
- ★ Cytology of discharge.
- ★ Mammography and ductography.
- ★ Ultrasound.
- ★ Imaging-guided percutaneous biopsy.
- ★ M.R.I.
- ★ Nuclear medicine (include PET).

Distinguish between Diagnostic & Screening Mammography

<p>Technical quality of the image</p>	<ul style="list-style-type: none"> ● Positioning. ● Compression ● Exposure ● Processing
<p>Is the lesion real?</p>	<ul style="list-style-type: none"> ● Nipple. ● skin fold ● Mole ● Pseudo Calcifications. ● Asymmetric parenchyma
<p>Cardinal mammographic features of malignancy</p>	<ul style="list-style-type: none"> ● Spiculated mass (well indication of cancer) ● Architectural distortion without mass. ● Micro-calcifications with casting or irregularity. e.g in-situ ● Circumscribed density with indistinct margins. ● Asymmetric density
<p>Calcifications</p>	<ul style="list-style-type: none"> ● 60% of localisation biopsies are for calcs, but only 25% of these yield malignancy. ● Distribution (casting, linear, segmental, clustered). ● Morphology (pleomorphism). ● Relationship to parenchyma
<p>Imaging features which can be associated with D.C.I.S</p>	<ul style="list-style-type: none"> ● Microcalcifications (75-90%). ● Circumscribed mass. ● Ill-defined mass. ● Prominent duct or nodule. ● Architectural distortion. ● Asymmetry. ● Subareolar mass.
<p>Recognise the cost of false positives</p>	<ul style="list-style-type: none"> ● Anxiety " I have cancer" ● Clinic and surgeon availability ● Morbidity and increased cost = opportunity cost for other health initiatives



Mammography



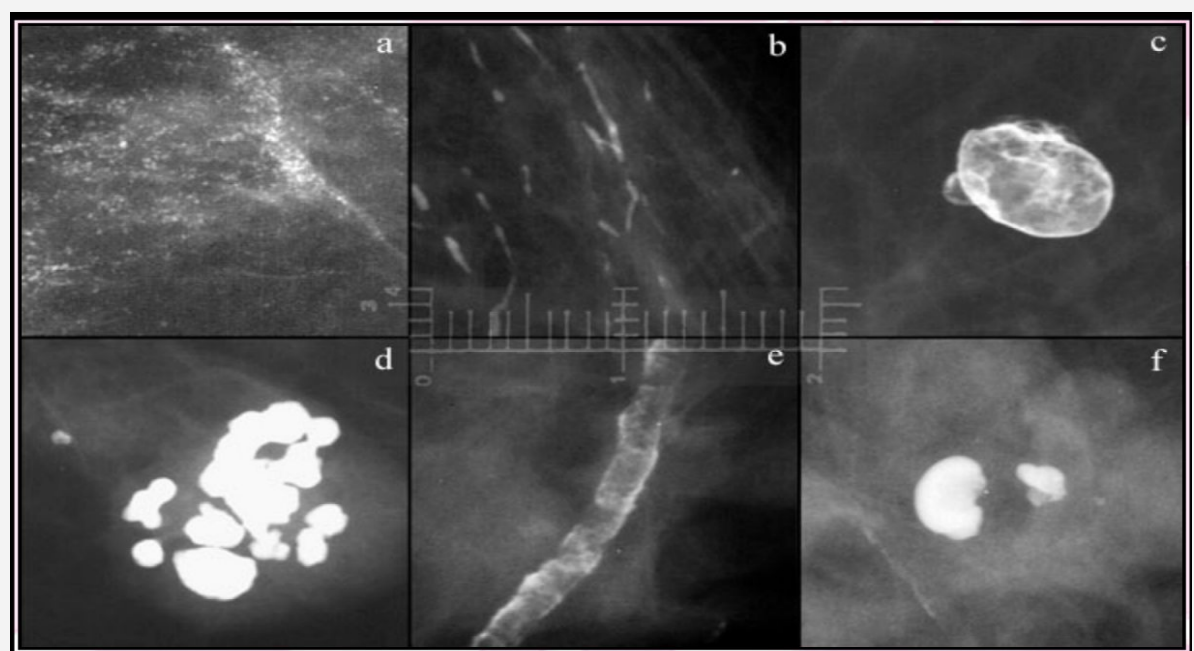
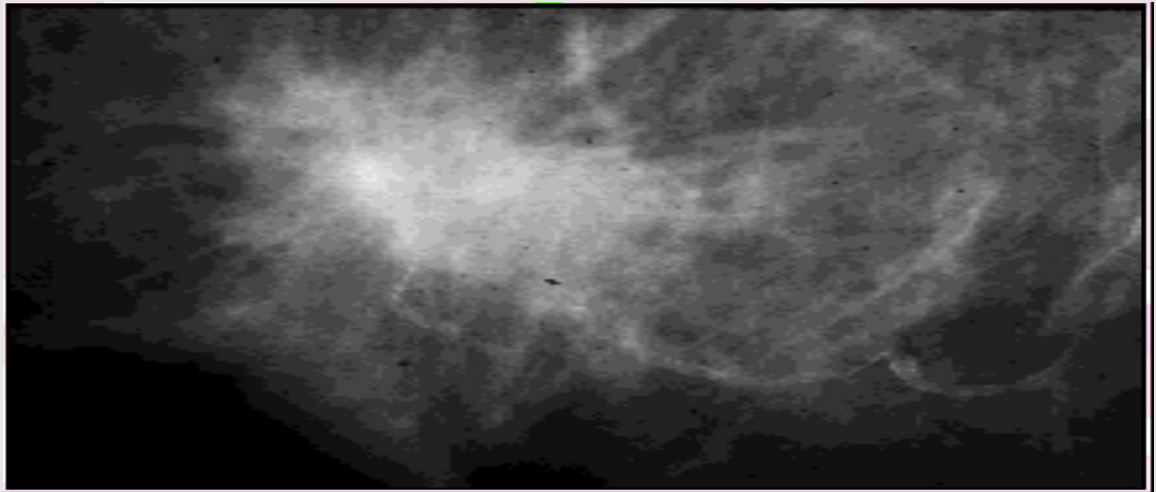
A

B

A. Normal unilateral mammogram with two standard views. This normal mammogram is an example of a fibrofatty pattern. (arrow: nipple)

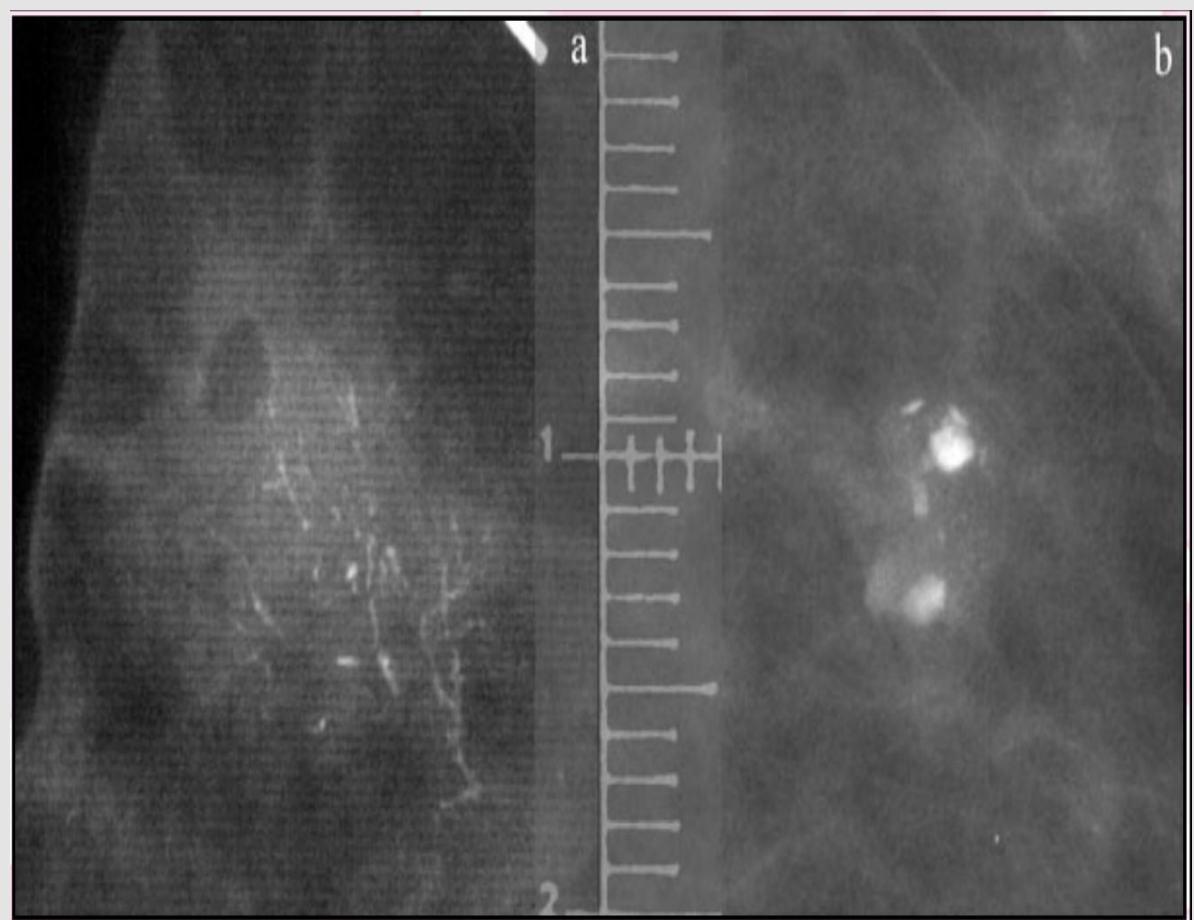
B. Spiculated Mass

Spiculated margins (suggestive of malignancy, biopsy should be considered) shaggy & not smooth margins



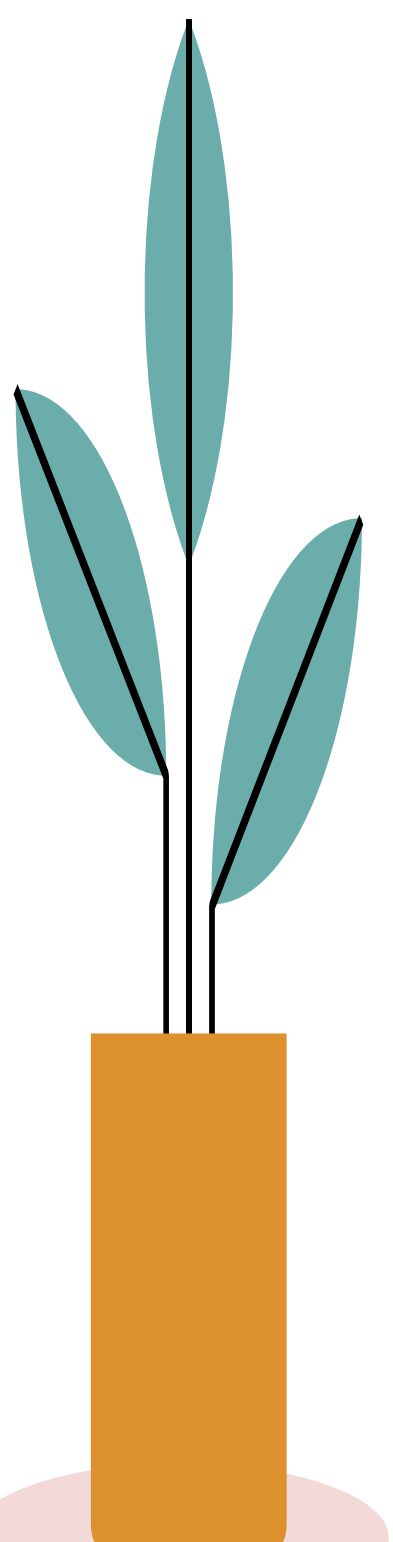
Benign calcifications

- a) Punctate
- b) Linear
- c) Spherical
- d) Popcorn e.g. in long standing fibroadenoma it'll eventually calcify and becomes popcorn
- e) Vascular (when the blood vessels calcify)
- f) Smoothly dense



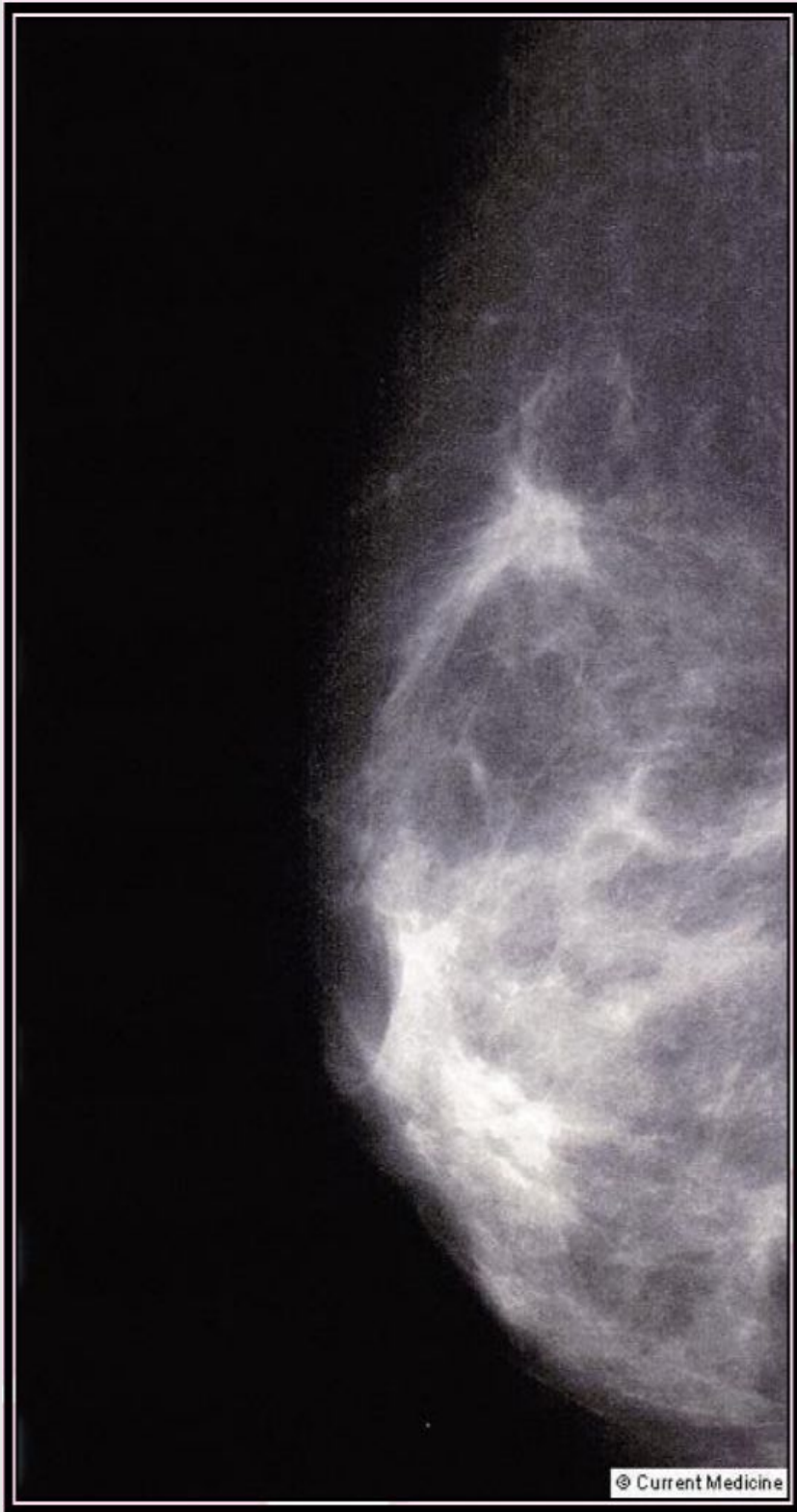
Linear: calcifications arrayed in a line that may have branch points.

- a) Ductal Carcinoma In Situ (DCIS)
 - i) Present with microcalcifications which are detected in mammograms
 - ii) Good prognosis if treated early
 - iii) Before the technology of mammogram, this lesion was always post-op but now its pre-op
 - iv) Its size decreased from 5 cm to 1.8 cm bc of awareness and early screening
- b) Fibroadenoma



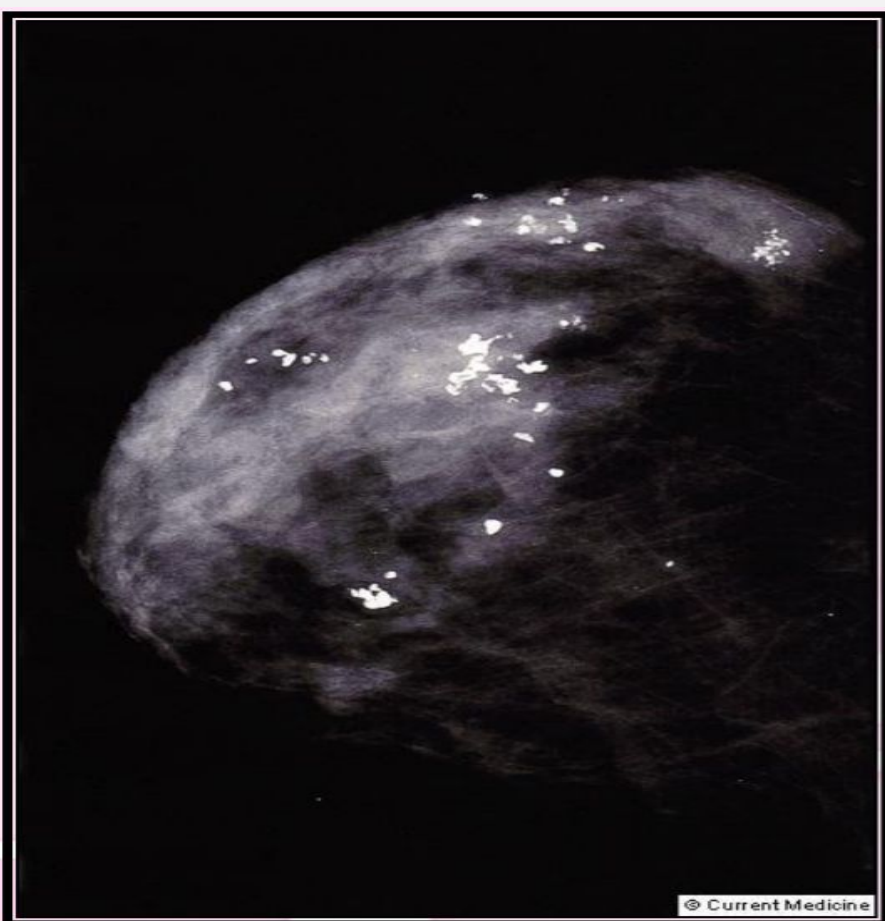
Mammography

Malignant Mass



- Intraductal and invasive ductal carcinoma not otherwise specified (NOS), nuclear grade 3. Invasive ductal carcinoma (NOS) is the most common type of breast cancer and represents 65% of the breast cancer in the United States.
- When the histologic pattern does not fit a specific subtype, it is labeled NOS. These cancers can present as a palpable mass or a spiculated mass on mammography.
- Malignant-type calcifications can be seen and are usually associated with an intraductal component. Ultrasound usually demonstrates a hypoechoic spiculated mass that may be taller than wide.
 - A. Mediolateral oblique view demonstrates a dense, spiculated mass with associated architectural distortion within the superior aspect of the breast. There are associated malignant-type calcifications.
 - B. Directed ultrasound of the breast demonstrates a spiculated hypoechoic mass corresponding to the mammographic lesion. Ultrasound-guided core biopsy revealed invasive ductal carcinoma.

Benign Microcalcifications



- A. Hyalinizing fibroadenoma, craniocaudal view. There are multiple scattered dense, large, coarse popcorn-like calcifications associated with a dense fibronodular pattern. When these calcifications begin to form, they may be suspicious in appearance, prompting biopsy. The calcifications may be too small to characterize, toothlike in configuration, and of varying densities. Hyalinizing fibroadenomas occur more commonly in older women.
- B. Secretory calcifications, mediolateral view. Rod-shaped, smoothly margined, dense, coarse calcifications in a pattern directed toward the nipple. These calcifications are commonly associated with ductal ectasia and periductal mastitis



Ultrasound (US)

Role of Ultrasound:

- Characterise a mammographic abnormality.
- Characterise a mammographically occult clinical abnormality (US is extension of palpation)
- Axillary lymph node masses are best assessed with ultrasound.
- Initial examination in the younger woman.
- Imaging guided biopsies,
- Some utility in distinguishing benign from malignant lesions.
- Still no role on screening, even in the mammographically dense breast.
- Developing role in monitoring neo-adjuvant therapy.

Advantages

- Painless.
- Does not use ionising radiation.
- Very good at detecting cysts.
- Can "see through" mammographically dense breasts.
- Low cost

Disadvantages

- Not good for screening the breast.
 - Bc it doesn't show microcalcifications
- Cannot always characterise lesions precisely.
- More operator-dependent than mammography.

What does US look for?

- Shows the masses very well
- Location of lesion
- Solid or cystic?
- Margins & borders
- Surrounding structures
- Does it consist of fluid or is it s solid mass?
- Orientation e.g. is vertical or horizontal?

Cysts

- Most common benign lesion in 30 yrs & above
- It's a cavity filled w/ lesion
- 3 types of cysts:
 - Pure cyst: painful mass containing fluid only with a < 0.3 % chance of becoming cancerous
 - Complex cyst: containing fluid & little solid with a 3% chance of becoming cancerou
 - Cystic lesion (solid cyst): hard lesion w/ cystic components & it has 20% chance of becoming cancerou
- Contain no or few echoes.
- Have smooth margins.
- Are often compressible with the ID.
- Have posterior enhancement (increased echos = whiter)
- Aspirate (if more than 3 cm)
 - If bloody → surgical biopsy
 - If non-bloody and disappear completely → observe
 - If non-bloody and doesn't resolve after 3 aspiration → surgical biopsy

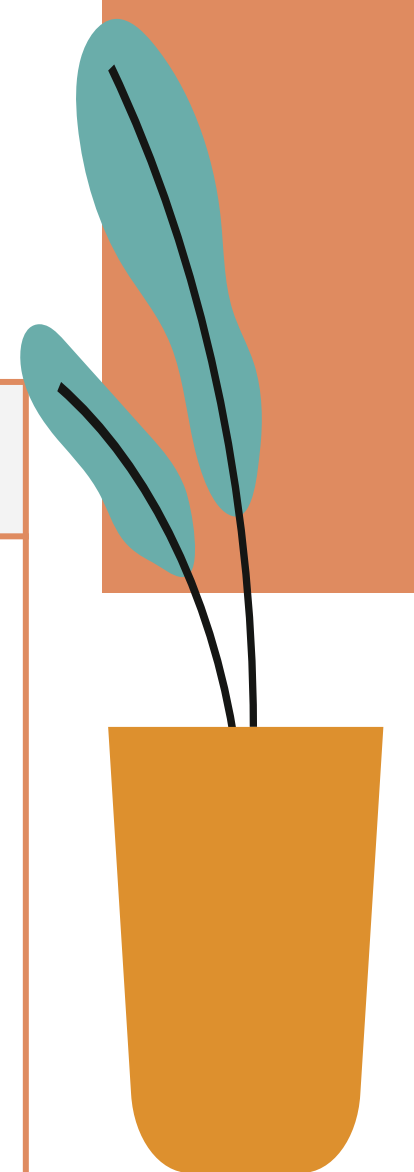


Benign Mass

- Pure hyperechoic
- Elliptical shape (wider than tall)
- Lobulated
- Complete tine capsule
- Have smooth margins.
- Have relatively uniform internal appearance.
- Don't disturb surrounding tissues

Malignant Mass

- Hypoechoic, spiculated
- Taller than wider or rounded (special types)
- Duct extension
- Microlobulation
- Have irregular or indistinct margins.
- Have heterogeneous internal appearance.
- Often cut across surrounding tissue planes



Examples of U/S Images

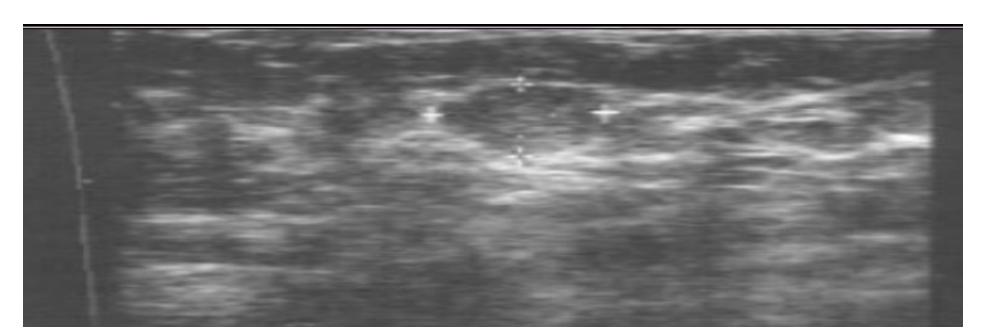
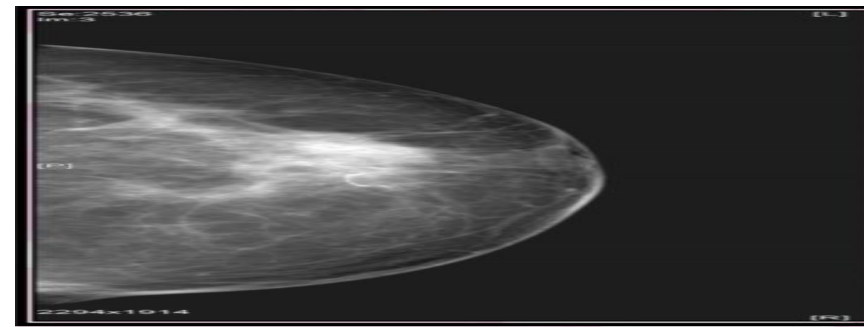
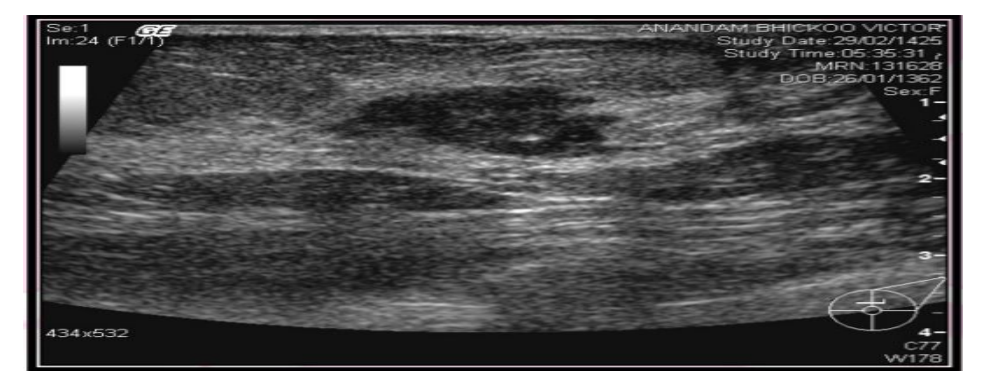
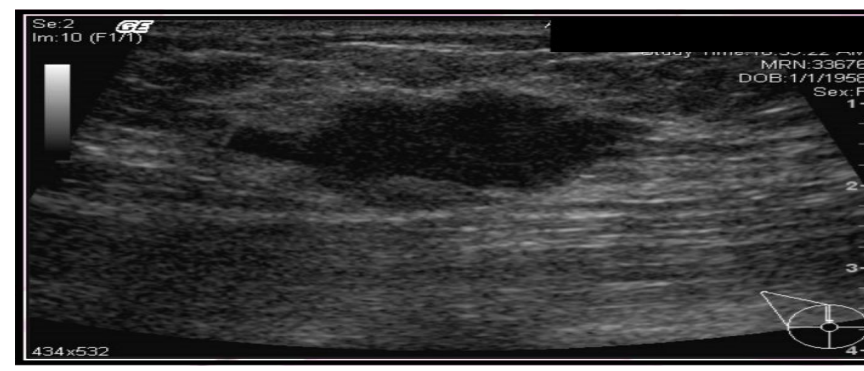
Irregular shape



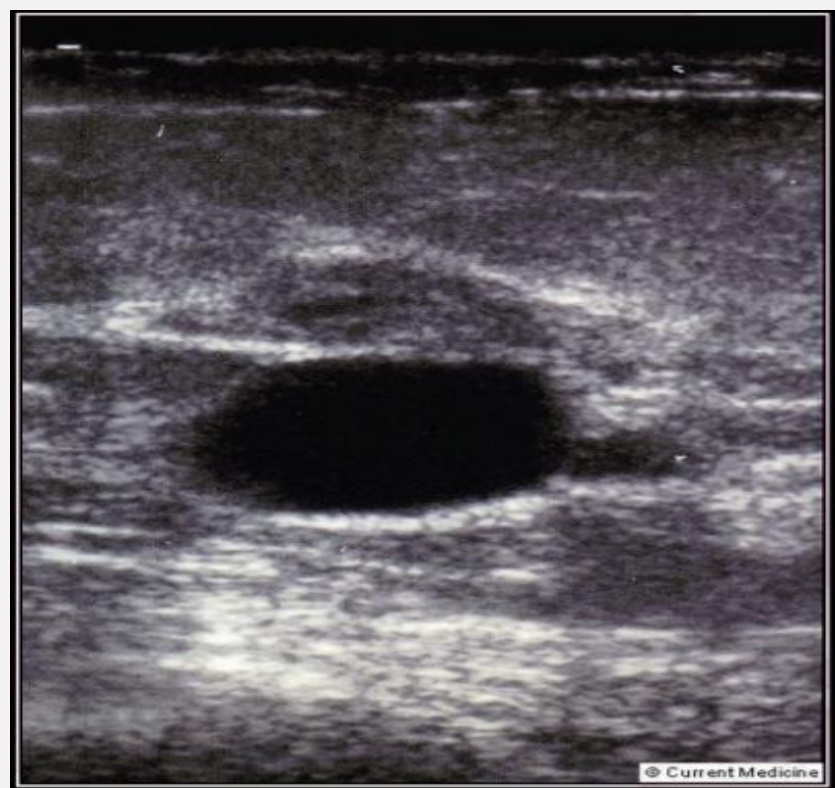
Ill-defined margin



Spiculated margins (cancer until proven otherwise)

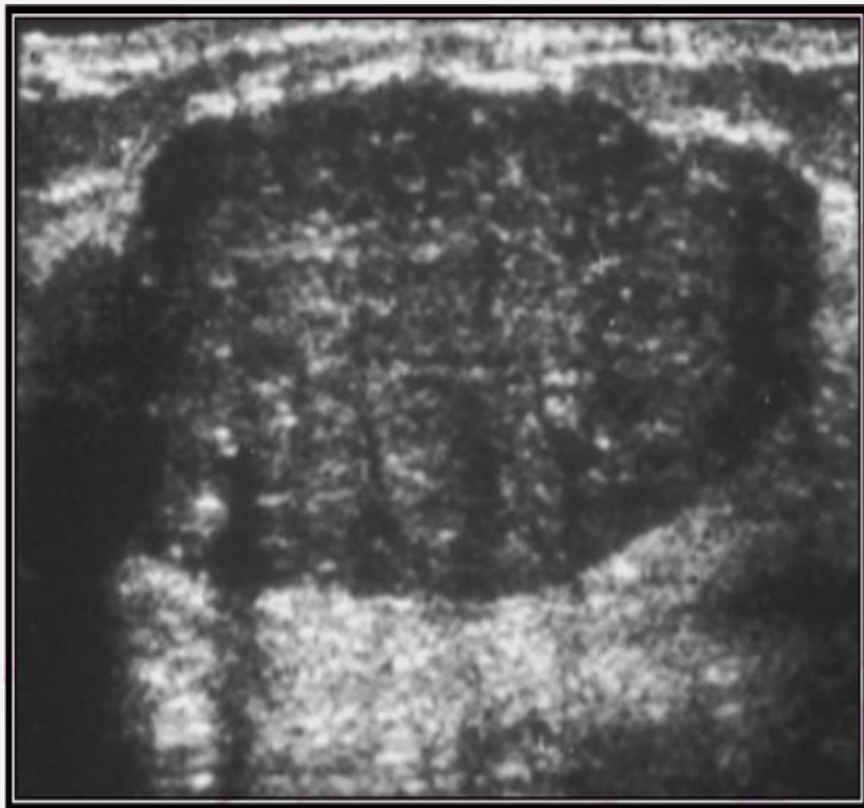


Benign Mass (simple cyst)



This patient presented with a new generally well-defined mass on her screening mammogram. Ultrasound demonstrates a well-defined, smoothly marginated anechoic ovoid mass with increased through transmission consistent with a benign simple cyst. Because this finding indicates a benign lesion, the patient was told to return to annual screening follow-up. 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 or eggshell microcalcifications. Ultrasound is the confirmatory diagnostic test demonstrating a well-defined mass devoid of internal echotexture. If any internal echoes are demonstrated, ultrasound-guided needle aspiration is recommended to fully exclude malignancy.

Fibroadenoma

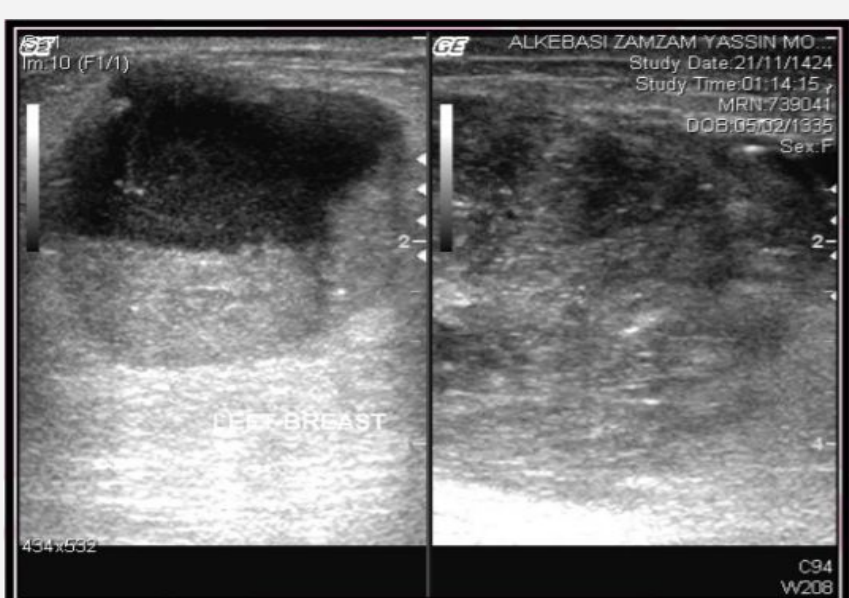


- A very common benign disorder in the younger age group
- Benign lesions
- 15-30 years old of age.
- Management: to leave alone or to excise?
 - E.g 1 cm mass in a young female & BIRADS 2 → Leave alone
 - E.g. 3.5 cm mass in a 38 year old female → Biopsy & excision
- BIRAD Score is a radiological breast imaging classifying system
 - 0 → no comment/ incomplete & need extra imaging
 - 1 → normal
 - 2 → benign
 - 3 → probably benign
 - 4 → suspicious
 - 5 → cancer until proven otherwise
 - 6 → already proven cancer

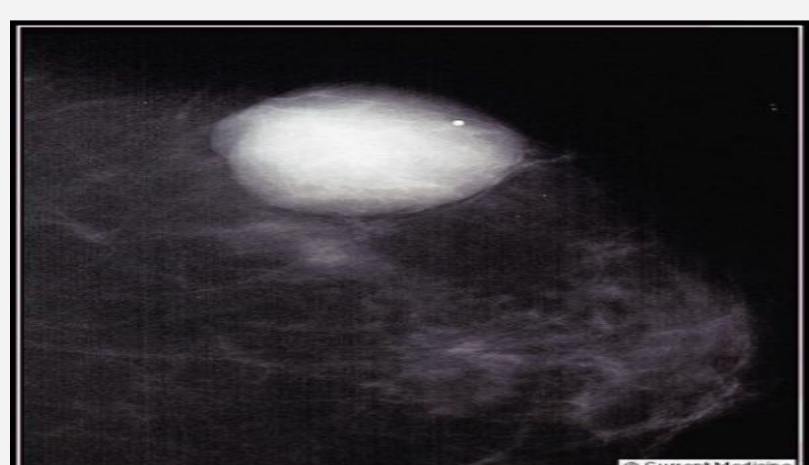
Phyllodes Tumor



- Locally malignant, usually big in size, don't go to the axilla but the lungs instead.
- When do we get suspicious about a breast lesion being a phyllodes tumor? 1. Size > 3cm 2. Biopsy not clear
- **Treatment:** Complete excision + radiotherapy to avoid reoccurrence



The phyllodes tumor or cystosarcoma is believed to be related to the fibroadenoma. The malignant form of this lesion (about 10%) can metastasize hematogenously most commonly to the lungs and not to the axillary lymph nodes. Most of these tumors are benign, but approximately 25% recur locally if they are incompletely excised. Lesions larger than 3 cm are more likely to be malignant. By both mammography and ultrasound, these lesions present as well-defined masses that are very similar in appearance to a benign fibroadenoma. On sonographic evaluation, the malignant forms are more likely to have cystic spaces [8]. This craniocaudal view demonstrating a large, well-circumscribed, dense, palpable mass within the lateral aspect of the breast. According to the patient's history, this mass had rapidly increased in size. Ultrasound core biopsy revealed phyllodes tumor.



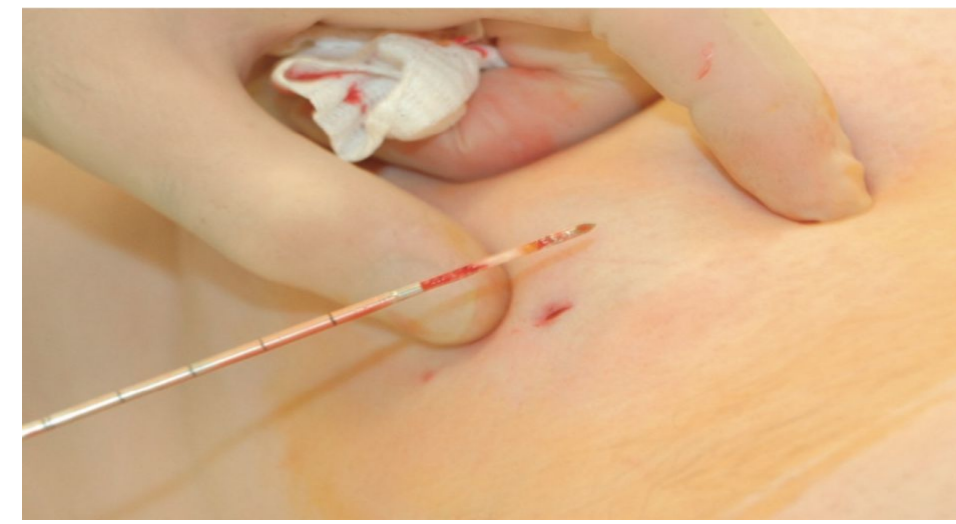
Biopsy

Fine Needle Aspirate Cytology

- Description of procedure: a thin needle is inserted into the mass for sampling of cells that are later on examined under a microscope.
- Clinical, U/S guided, mammotomes
- Sensitivity 80-98% – False negative 2-10%
- Cannot differentiate invasive from in situ cancer. It is used most frequently to sample lymph nodes that are abnormal on imaging in patients with breast cancer. FNA of nodes should be performed under image guidance with use of local anaesthesia.

Core Biopsy

- Tissue diagnosis, Painful, Costly, Receptor status
- It can differentiate invasive from in situ disease
- Cancer type and receptor status can be assessed
- It has an extremely low rate of false positives
- It has a very high sensitivity when image guided
- After injection of local anaesthetic several cores are removed from a mass or an area of microcalcification by means of a cutting needle technique



Punch Biopsy

- Punch biopsy of any nipple ulceration or change can be used to diagnose Paget's disease of the nipple.

Triple Assessment

- This is the combination of clinical examination, imaging (ultrasound + mammography) and core biopsy or FNA cytology. All patients with a discrete localised mass or asymmetric nodularity should have triple assessment. The use of triple assessment minimises delay in diagnosis.

Table 19.2 Sensitivity of investigations in the diagnosis of symptomatic breast disease in specialist clinics

	Clinical examination	Mammography	Ultrasonography	Core biopsy	Fine-needle aspiration cytology
Sensitivity for cancers	86%	86%	90%	98%	95%

Percentage of cancers detected by test as malignant or probably malignant (that is, complete sensitivity).



Nipple Discharge

- 5% of women coming to clinic.
- 95% of them → benign
- Most important points in history are
 - Is it spontaneous or on pressure?
 - Is it coming from single or multiple?

Color

Serous, serosanguinous, bloody, clear, milky, green, blue-black.

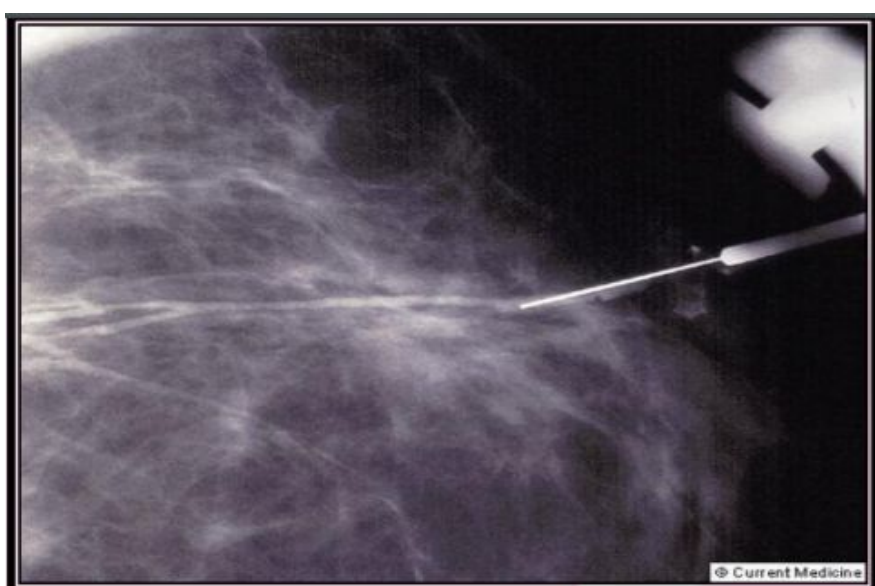
Investigation

- H&P
- R/O mass by exam and mammogram

Identify the source of discharge

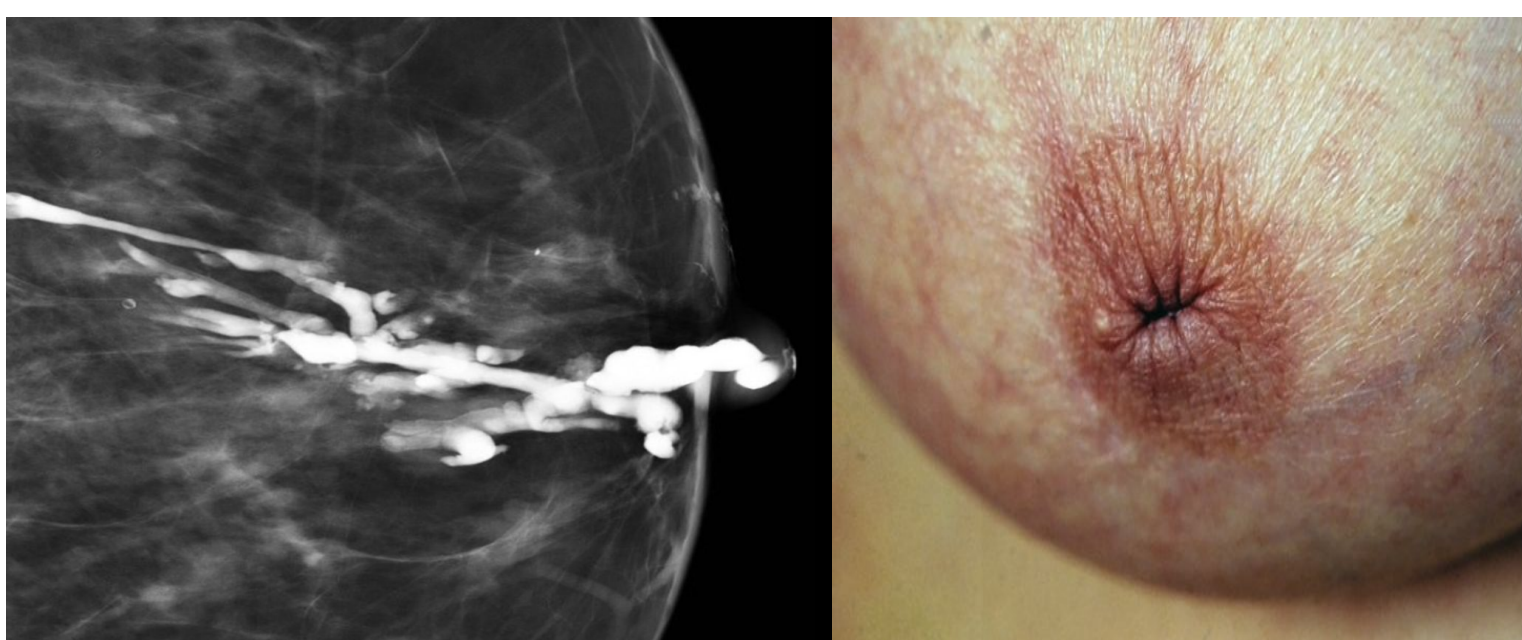
Ductography.

- For further evaluation of spontaneous nipple discharge, a painless ductogram can be performed. Using aseptic technique, a 30-gauge sialography catheter is used to cannulate the affected single ductal orifice. Approximately 0.2 to 0.4 mL of radiographic contrast is injected through the catheter. Magnification views in the true lateral and craniocaudal projections are then obtained.
- Ductography is useful in detecting the location of the lesion (or lesions) within the ducts and the extent of involvement. This information can be extremely helpful in presurgical planning.

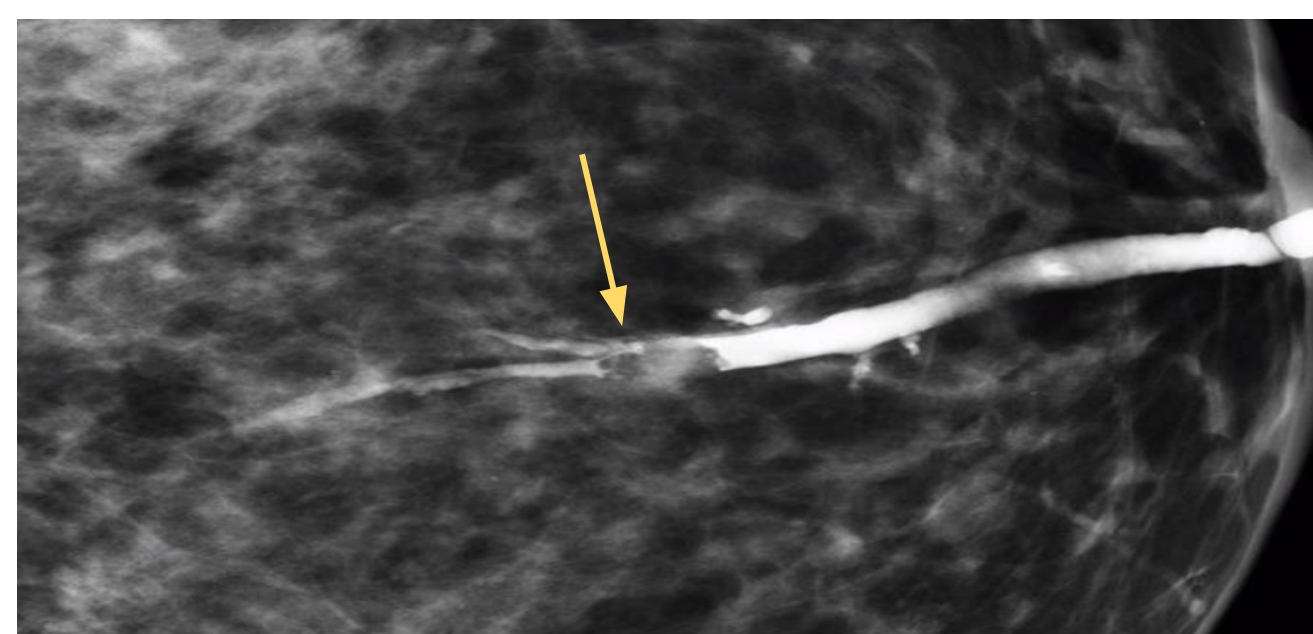


A. Normal ductogram.
Magnification view demonstrates a normal contrast- opacified duct. There is no dilatation or filling defect.

- B. Abnormal ductogram. Magnification view demonstrates a single lobulated filling defect in the cannulated duct with associated ductal ectasia. Before surgery, a preoperative ductogram was performed with injection of a combination of radiographic contrast and methylene blue to localize the specific duct. The patient was found to have a solitary papilloma.
(we couldn't find an exact image for description above but we found similar ones)



Duct Ectasia (slit-like nipple retraction)



Filling defect caused by intraductal papilloma

Causes of Nipple Discharge

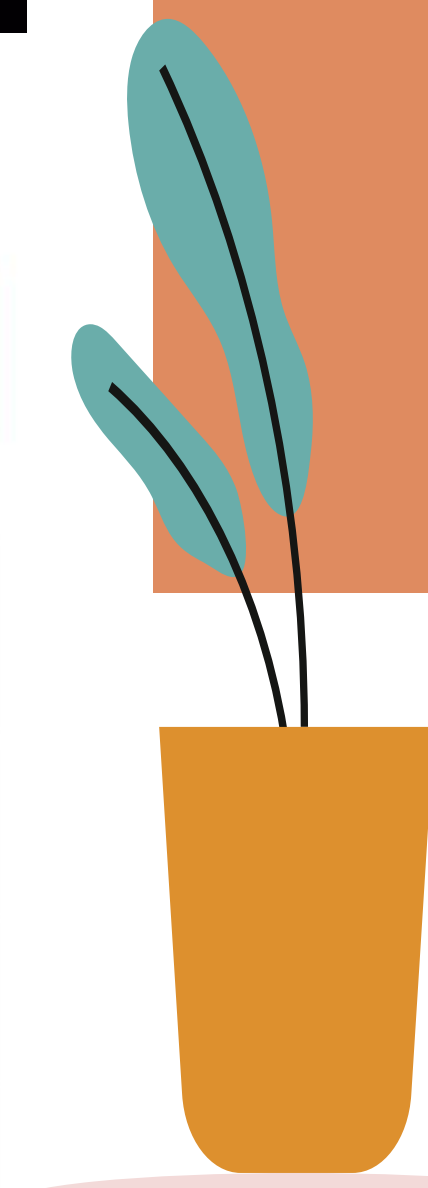
- Duct ectasia
- Papilloma
- Cyst communicating with duct system
- Lactation . Infection also can cause it

Management

- **Observation** if it was proven not to be malignant
- Single duct excision
- Total duct excision

Table 19.3 Causes and management of nipple discharge

Cause	Discharge characteristics	Management
Duct ectasia	Variable colour and consistency; multiple ducts	Reassurance Excision of ducts
Duct papilloma	Copious serous, bloody, single duct	Microdochectomy
Carcinoma in situ	Single duct, bloodstained, persistent, serous discharge	Image-guided biopsy or microdochectomy
Prolactinoma	Milky, multiple duct	Endocrine evaluation



Breast Cancer

Fast Facts:

1. Killer of women
 2. USA 1:8
 3. KSA around 3000 cases last year
 4. 250 000 cases of cancer breast last year (USA)
 5. 45000 deaths due to it in one year (USA)
- Breast cancer is the most **common cause of death** from **cancer** in western women
 - The most common presentation is a **painless breast mass**
 - **9 out of 10 women who get breast cancer do not have a family history of the disease**
 - If a male is diagnosed w/ breast cancer we have to screen the whole family bc it might be genetic
 - **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%
 - 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
 - **Awareness → screening → good therapy**
 - The five year survival rate for women diagnosed with breast cancer is around 85 %
 - Although we know of many factors that contribute to the risk of women getting breast cancer, the cause remains **unknown**

Five-Year Survival Rates in Women with Breast Cancer

Stage at diagnosis	Survival rates (%)
Localized (stage 1)	96.8 98%
Regional	75.9
Distant or Metastatic (stage 4)	20.6 18%



Mass & nipple retraction (cancer until proven otherwise)

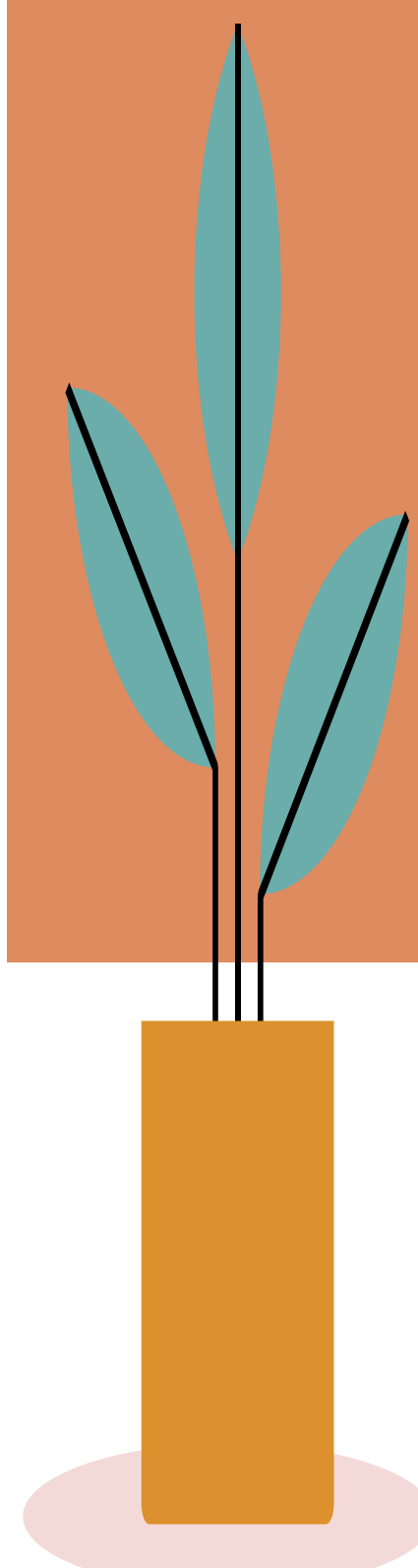
If ignored it starts invading the skin & become a T4 lesion

If ignored more it becomes a **fungating breast cancer**
Notice how the upper arm is swollen bc the lymphatic channels are totally blocked → lymphedema secondary to breast cancer

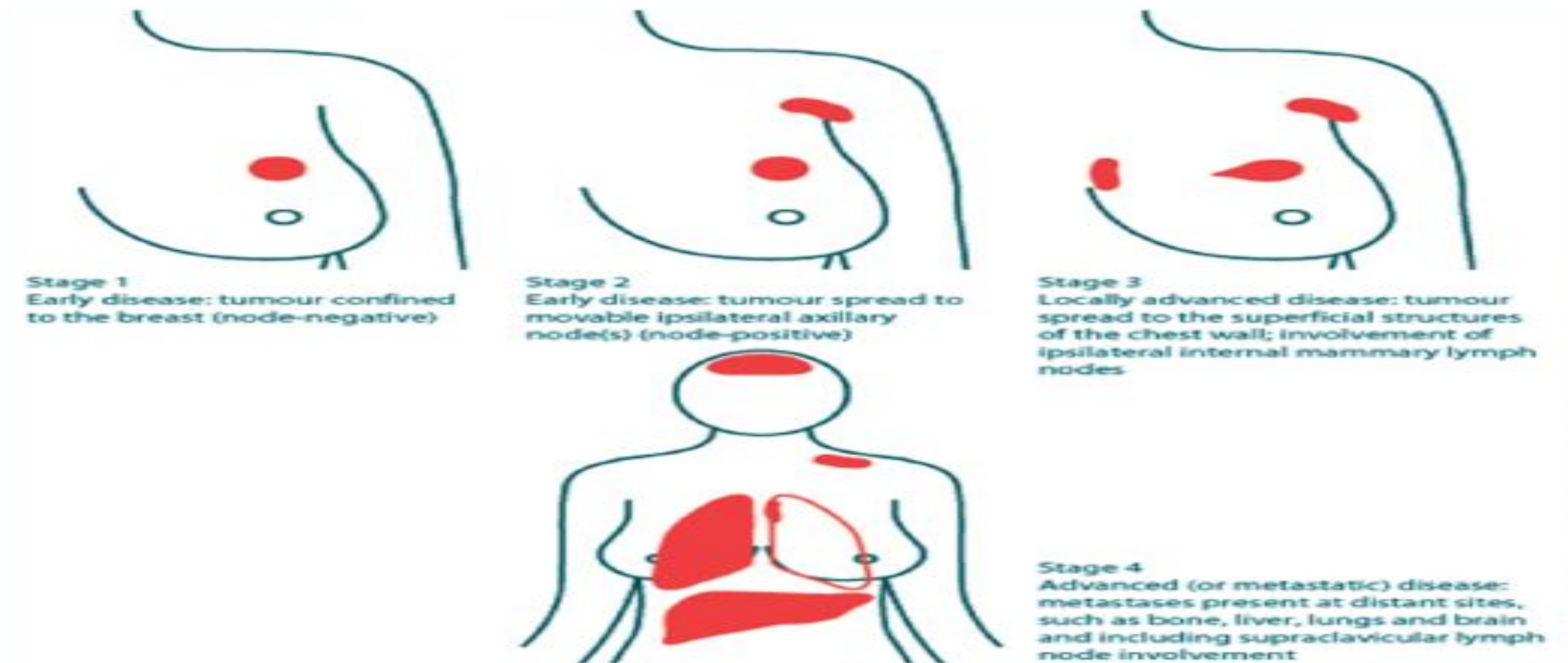
Treatment: wound care + systemic therapy (radiotherapy, chemotherapy, hormonal therapy, or biological therapy) until the disease is controlled → distant metastasis? **No:** surgery
Yes: surgery is useless keep treating w/ systemic therapy

Prognostic Factors

1. Size
2. Grade (1 is mild where 3 is aggressive)
3. Lymph nodes
4. Biological characteristic of the tumor
 - Estrogen receptor (ER) positive tumors are better than ER negative tumors
 - Triple negative cancer is the worst (ER, Progesterone Receptor & HER2 -ve)



Staging Classification of Breast Tumour

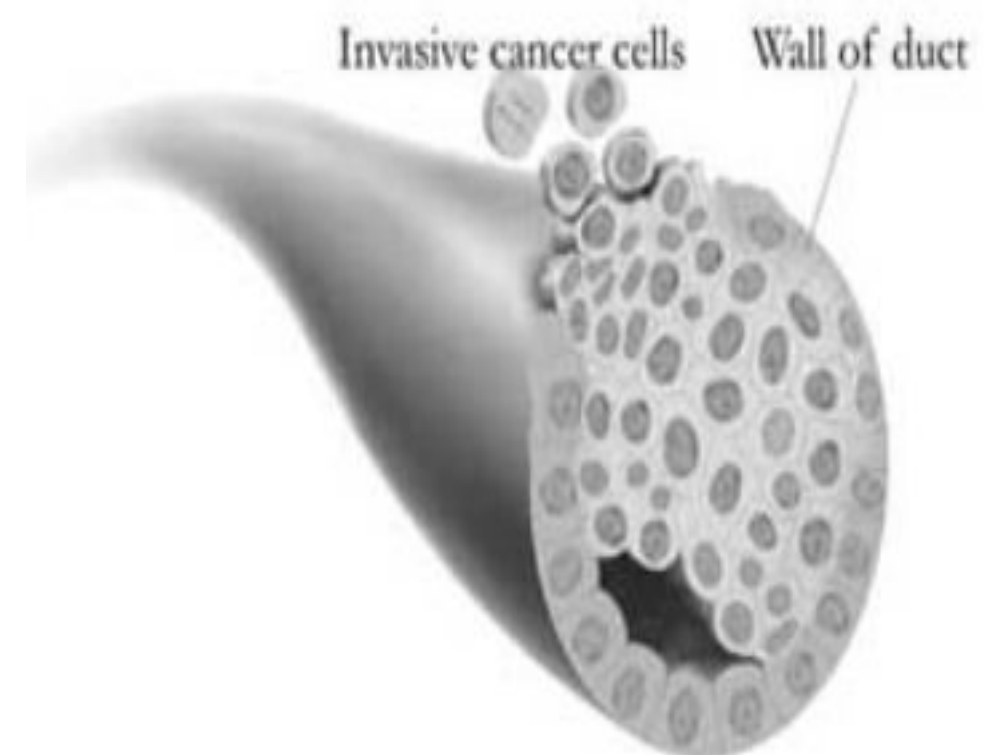
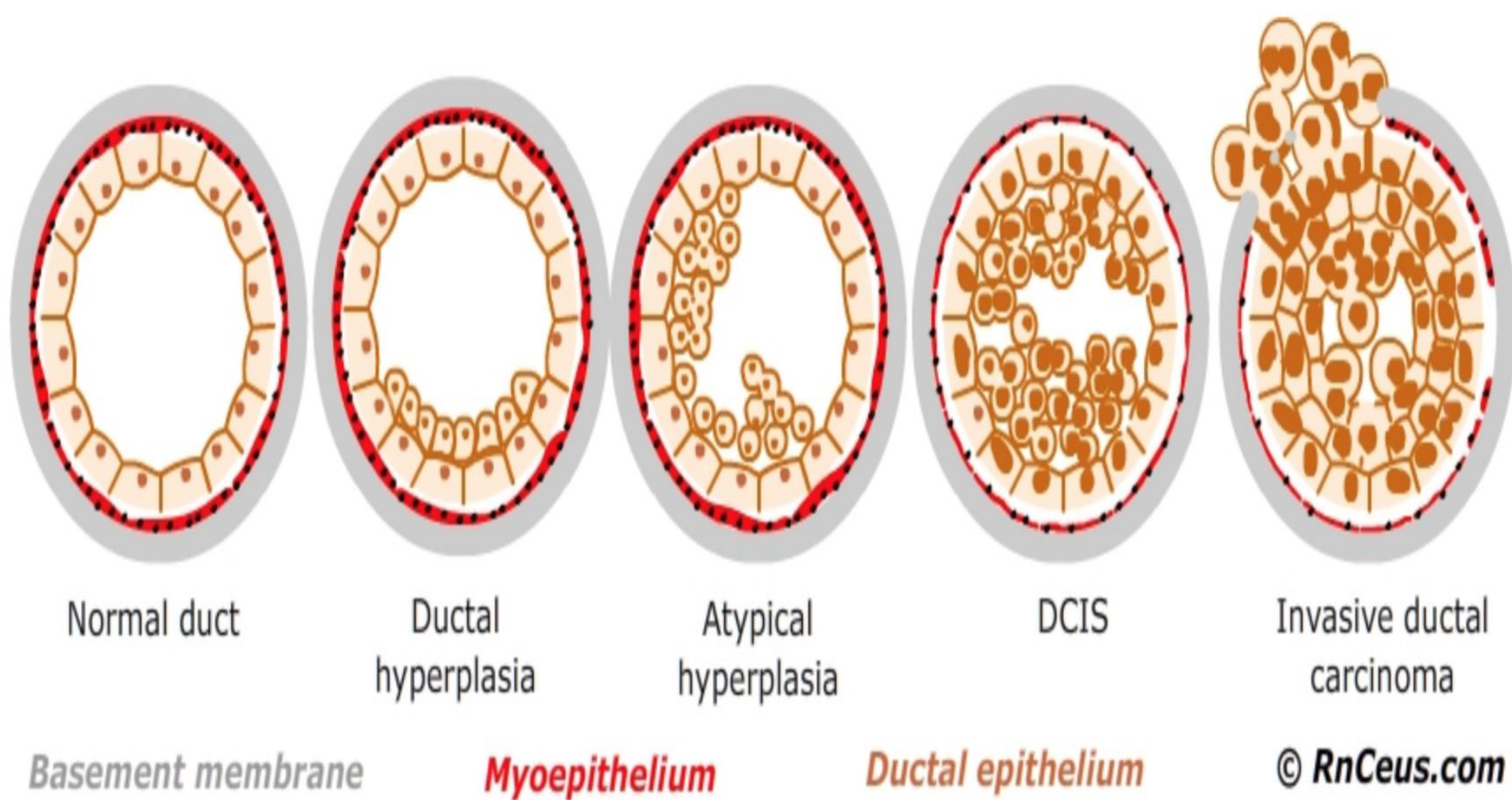


Stage 1: small mass no axillary lymph node involvement

Stage 2: small mass with one or two mobile lymph nodes

Stage 3:

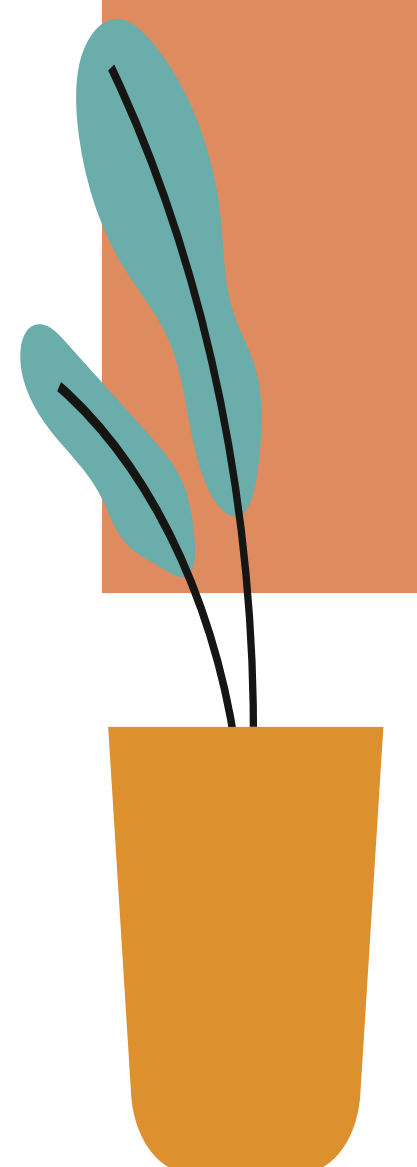
- Any tumor > 5 cm
- Any tumor invading the skin
- Any tumor invading the muscles (pec. major)
- Any inflammatory breast cancer which present as abscess which will fool you to think that it's just a simple infection where you'll give her antibiotics and never check up on her.
 - Any patient diagnosed with breast abscess **needs follow-up** after giving them antibiotics until the whole abscess is subside clinically (no redness, no mass & no hotness) and radiologically (shows no abscess)



This picture shows cancer that has spread outside the duct and has invaded nearby breast tissue.

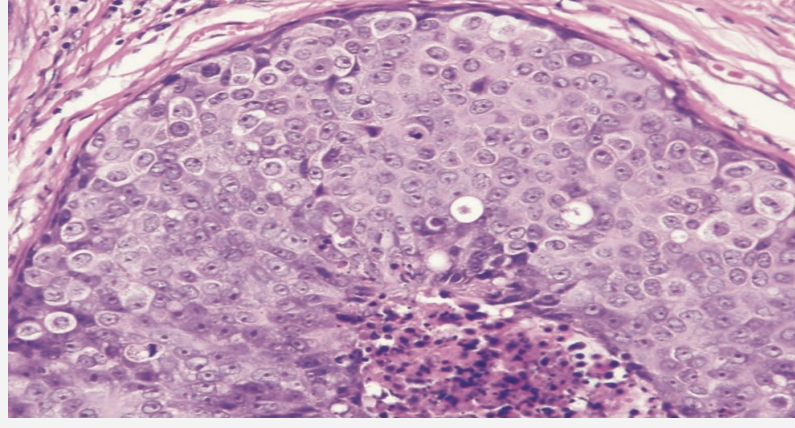
How is Ductal Carcinoma In Situ treated?

- Depending on the degree of DCIS the options of treatment are:
 1. Total mastectomy **big**
 2. Lumpectomy **small**
 3. Lumpectomy & radiation therapy
- DCIS **does not usually spread to the axillary lymph nodes** so these are usually not removed



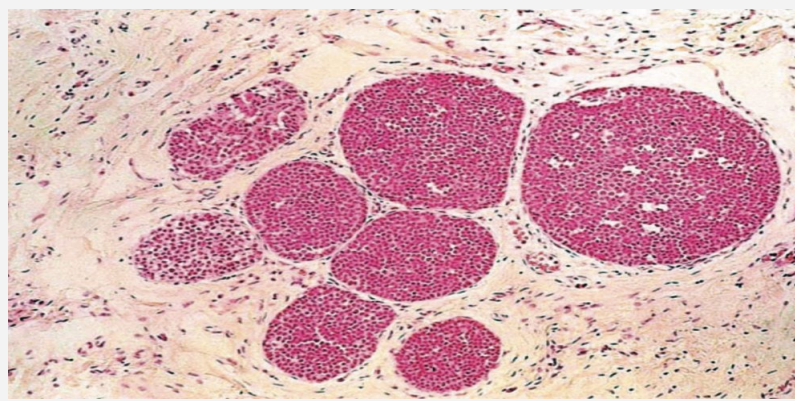
Histopathological Types of Breast Cancer

Infiltrating (or invasive)
Ductal Carcinoma
(IDC) 85-90%



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.

Infiltrating (or invasive)
Lobular Carcinoma
(ILC) 5-10%



This type of cancer starts in the milk-producing glands. About 10 to 15 percent of invasive breast cancers are invasive lobular carcinomas.

Medullary Carcinoma

This type of invasive breast cancer has a relatively well-defined distinct boundary between tumour 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.

Lines of Treatment

<p>Surgical Intervention</p>	<ol style="list-style-type: none"> 1. Mastectomy 2. W.L.E. 3. Sentinel lymph node biopsy 4. Axillary lymph node dissection
<p>Radiotherapy</p>	<p>Common reactions <u>during</u> the course of treatment</p> <ul style="list-style-type: none"> - Skin reddening and irritation, fatigue, loss of hair & sore throat <p><u>AFTER</u> the course of treatment</p> <ol style="list-style-type: none"> 1. discomfort and sensitivity in the treated area. 2. increased firmness swelling of the treated breast
<p>Chemotherapy</p>	<ul style="list-style-type: none"> ● For fast growing cancers e.g. grade III or lymph nodes involvement ● Chemotherapy for breast cancer is usually given in cycles every three or four weeks. ● The common schedules include: <ul style="list-style-type: none"> - CMF (Cyclophosphamide, Methotrexate and 5-Fluorouracil) - AC (Adriamycin, Cyclophosphamide) - Taxol or Taxotere ● Side effects: <ul style="list-style-type: none"> - Fatigue, anorexia, nausea & vomiting - Hair loss, effects on the blood, & mouth problems - Skin problems, fertility & bowel problems
<p>Hormonal Therapy (tamoxifen)</p>	<ul style="list-style-type: none"> ● For estrogen receptor positive tumors ● 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. ● Tamoxifen is sometimes used for patients whose breast cancer recurs. ● It is also being tested to see if it can <i>prevent the development</i> of breast cancer in unaffected women who are at an increased risk because of a <i>strong family history of the disease</i>. ● Currently the recommended length of Tamoxifen therapy is five to 10 years. ● The most important side effect of tamoxifen is endometrial cancer & DVT ● Mechanism of action: it goes to the cancer cell and occupies the estrogen receptor → slows the growth of the cancer cell ● Common side effects: <ul style="list-style-type: none"> - Hot flushes or sweats - Irregular menstrual periods (in women who have not gone through the menopause) - Vaginal irritation, including vaginal dryness or discharge - Fluid retention and weight gain ● Uncommon side effects: <ul style="list-style-type: none"> - Lightheadedness, dizziness, headache or tiredness - Rash & Nausea
<p>Biological Therapy</p>	<ul style="list-style-type: none"> ● For HER2 positive patients ● Trastuzumab

Lymphoedema

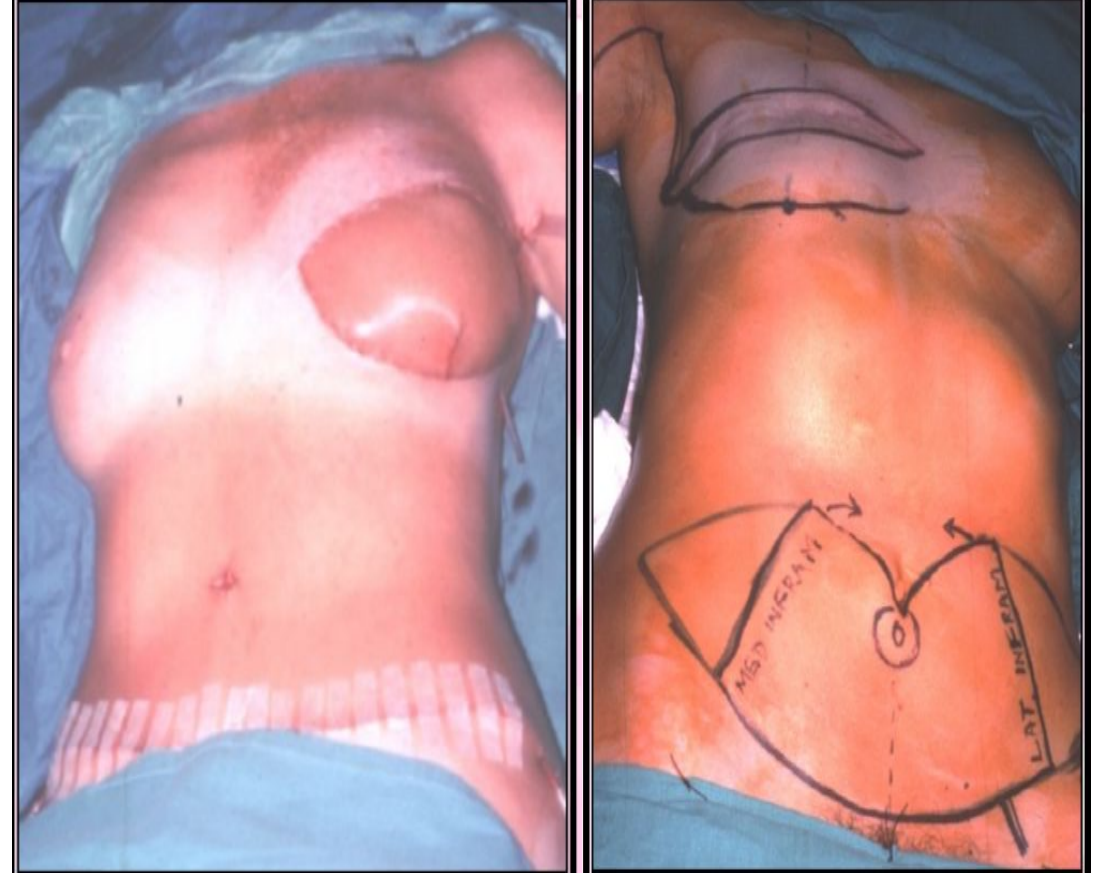
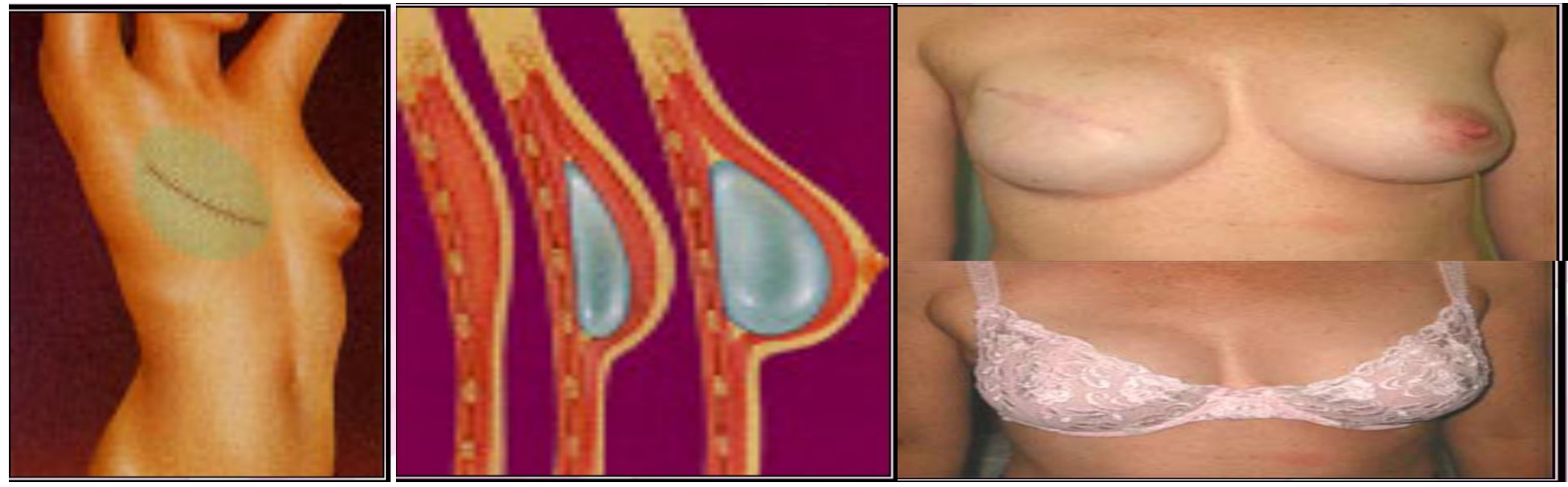


- What is Lymphoedema? A long-term swelling of the arm after axillary surgery or radiotherapy to the axilla. **Occurs after axillary lymph node dissection in 20-30%**
- Symptoms: general heaviness of the arm, a swelling of the fingers or sometimes difficulty putting on a long sleeve.
- The earlier treatment 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 lymphoedema. This risk increases to 1 in 3 if the pt. had both of these treatments.
- **Lymphoedema can occur any time after the operation as early as 3 months or even up to ten years.**



Post Operative Breast Reconstructions

- ★ The aim of breast reconstruction is to rebuild the breast shape and, if desired, the nipple and the surrounding darker skin (areola).
- ★ Reconstruction usually does not restrict any later treatments that may be necessary, 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 when they have a permanent prosthesis or reconstruction.

There are two main types of breast reconstruction:

<p>1. Flap Reconstruction</p>	<ol style="list-style-type: none"> Using the latissimus dorsi DIEP: Deep Inferior Epigastric Perforator artery & vein are taken from the rectus abdominis → attached to the chest wall blood vessels to provide a blood supply & the abdominal tissue is used to make a breast TRAM: part of the Rectus Abdominus Muscle is used along with the skin and fat of the abdomen to create a breast 	
<p>2. Tissue or skin expander with breast implants</p>	<p>A tissue expander is inserted after the mastectomy to prepare for reconstruction. The expander is gradually filled with saline to stretch the skin enough to accept an implant beneath then chest muscle</p>	
	<p>External breast prosthesis - specially designed padding available in different sizes, shapes & colors</p>	 <p>Nipple reconstruction from the upper skin of the thigh</p>

When and why BSE should be done?

Once a month, preferably just after a period. If the women has no longer have a period, she may choose a day that she will remember each month. To be most effective, BSE should be done regularly and carefully.

Step 1 - Look at your breasts.

- changes in the size and shape of your breast
- any dimpling, puckering or skin changes
- anything different about your nipples

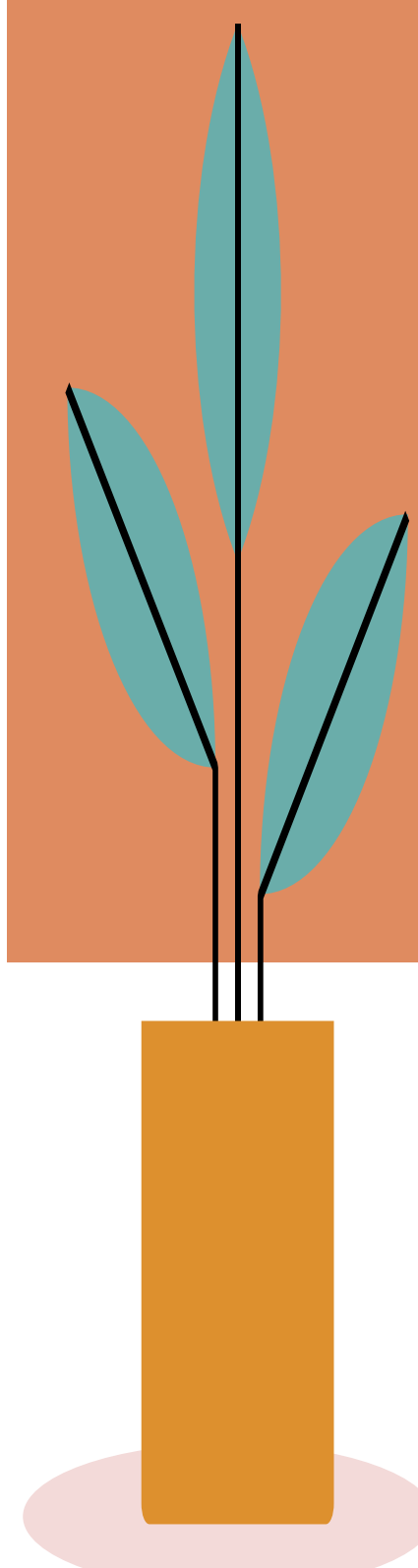
Step 2 - Feel your breasts

You may find it easy to examine your breasts in the **shower**. You may also like to check your breasts **lying down** with a pillow under your shoulder. In either position raise your arm above your head. Use the flat part of your fingers to feel each part of your breast.

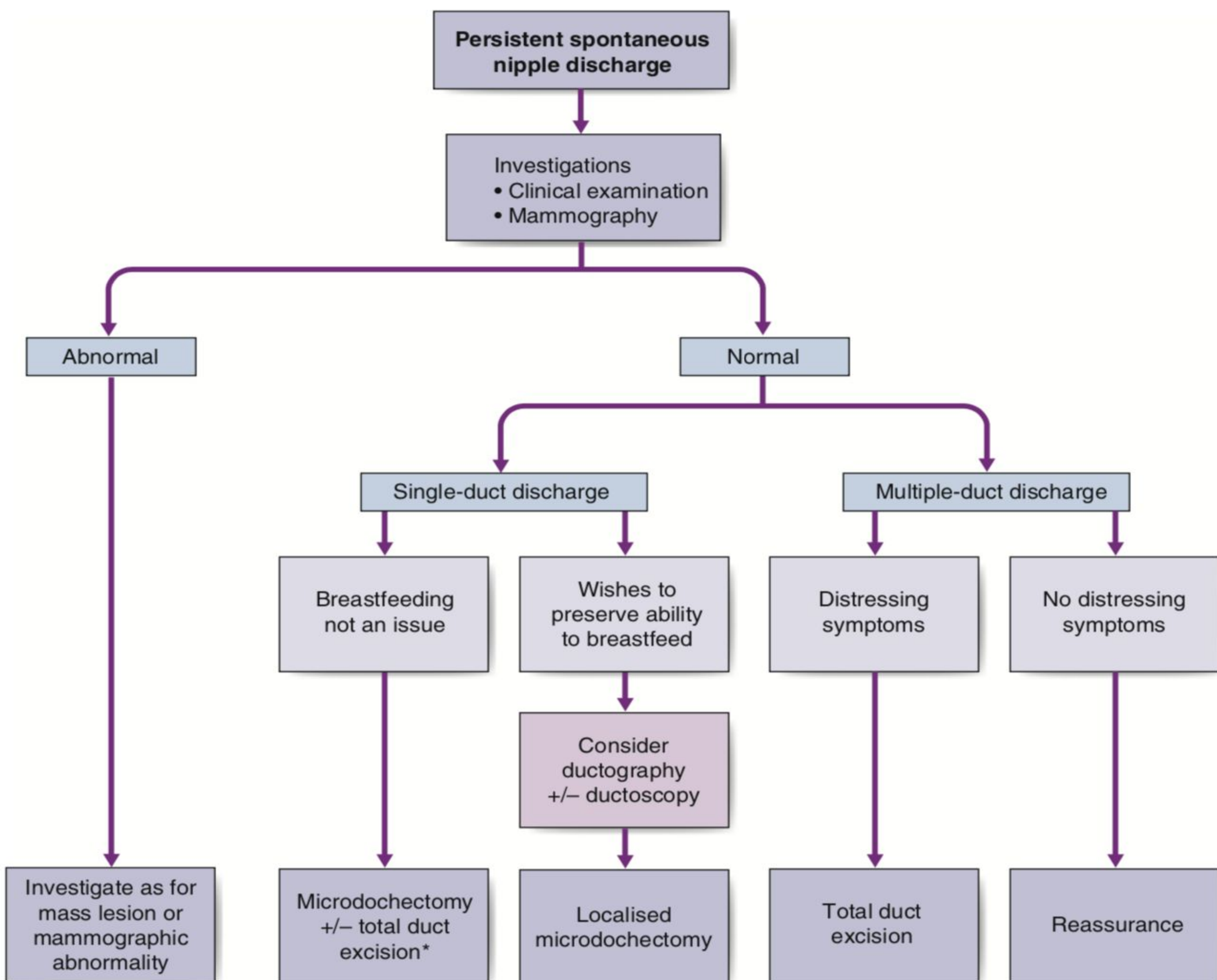
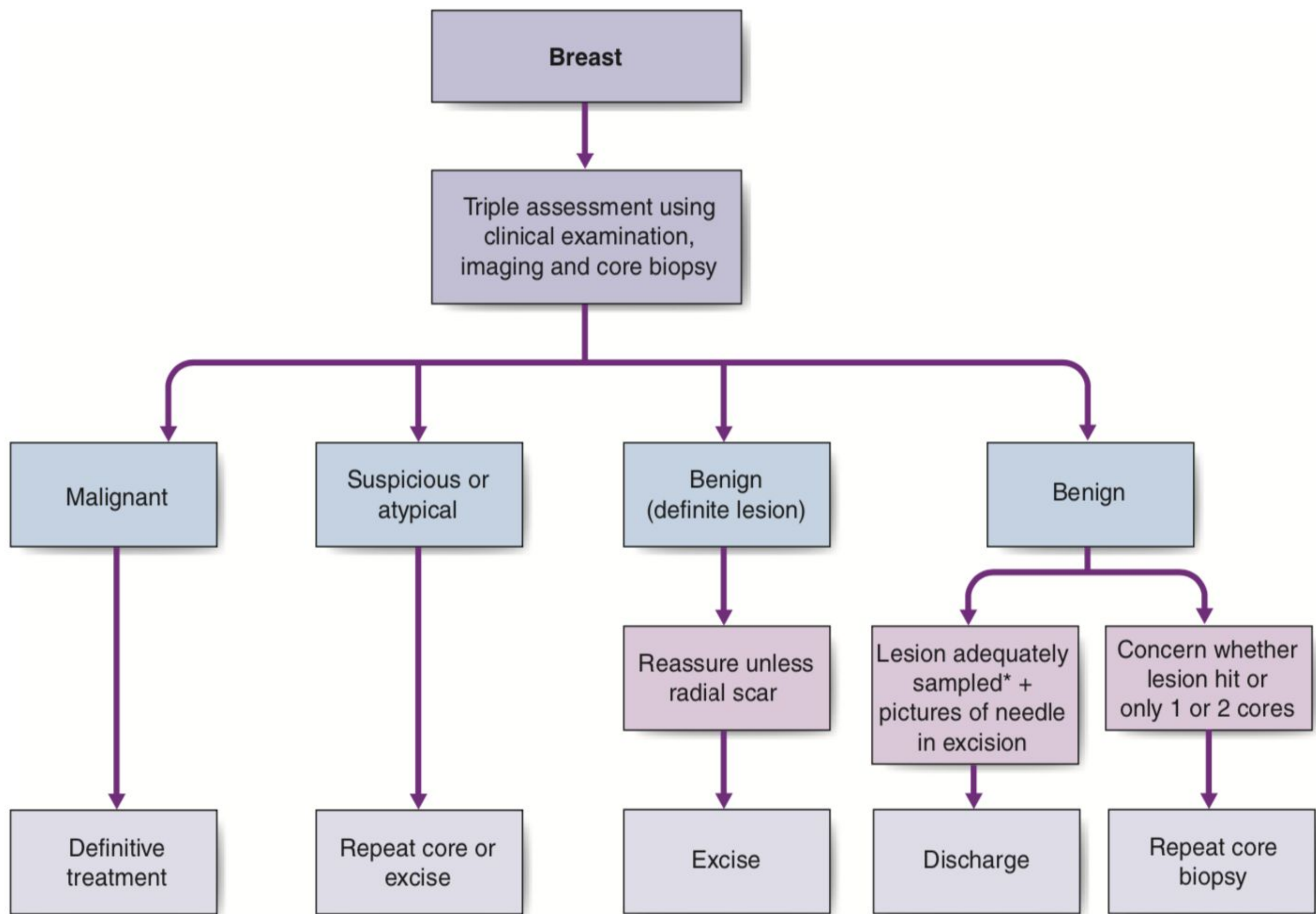
Move the skin over the underlying tissue in a gentle rotating movement

- Cover the entire breast area in a circular movement, finishing at your nipple
- Check from the collar bone
- Check into your armpit
- Check both breasts

- Looking for: 1. Lumps (even if painless) 2. Discharge 3. Thickening 4. Any other changes



Summary from Davidson



Summary

★ The suspensory breast ligaments are called Cooper's ligaments, tumor involvement of these ligaments causes subsequent traction and pulls the skin inwards (skin tethering)

What are the levels of axillary lymph nodes?

- Level I (low): lateral to pectoral minor
- Level II (middle): deep to pectoral minor
- Level III (high): medial to pectoral minor

How to approach the patient?

History - physical examination - imaging - cytology and tissue diagnosis.

If the patient < 40 we start with ultrasound if > 40 we start with mammogram

If the imaging is BIRAD3 or more then we may go for a biopsy

We do MRI if the patient has silicone prosthesis or the patient is younger than 35 yo with a positive family history.

The different methods of biopsy are:

- Fine needle aspiration (FNA): FNA is usually the best initial biopsy. It will tell you if it is benign or malignant
- Core needle biopsy: it gives more biological characteristics of the mass. This is a larger sample of the breast. you can test for estrogen receptors (ER), progesterone receptors (PR), and HER 2/neu. Difficulties include greater deformity with the procedure and the possibility that the needle will miss the lesion.
- Open biopsy: The "most accurate diagnostic test," open biopsy allows for frozen section to be done while the patient is in the operating room followed by immediate resection of cancer followed by sentinel node biopsy.

CARDINAL MAMMOGRAPHIC FEATURES OF MALIGNANCY

- Spiculated mass.
- Architectural distortion without mass.
- Micro-calcifications with casting or irregularity.
- Circumscribed density with indistinct margins.
- Asymmetric density.

Ductal carcinoma in situ usually presents as a microcalcification.

A long standing fibroadenoma eventually calcifies and it presents a popcorn calcification and it is always a benign calcification.

BENIGN MASSES:

- Have smooth margins.
- Have relatively uniform internal appearance.
- Don't disturb surrounding tissues.
- 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).

★ Cyst is the most common presentation and it is benign, the patient presents with a painful mass then you do US and you find a pure cyst, if it is more than 3 cm you aspirate to dryness, if you get blood then remove it surgically, if it is dry then you repeat the ultrasound after 3 months, if it reoccurs 3 times you remove it surgically.

★ phyllodes tumor is locally malignant, it doesn't go to the axilla but mostly to the lungs

When to suspect a lesion to be phyllodes? If it is more than 3 cm and if the biopsy is not clearly saying it is a fibroadenoma.

★ If nipple discharge is spontaneous and single nipple most commonly the cause is **nipple adenoma**

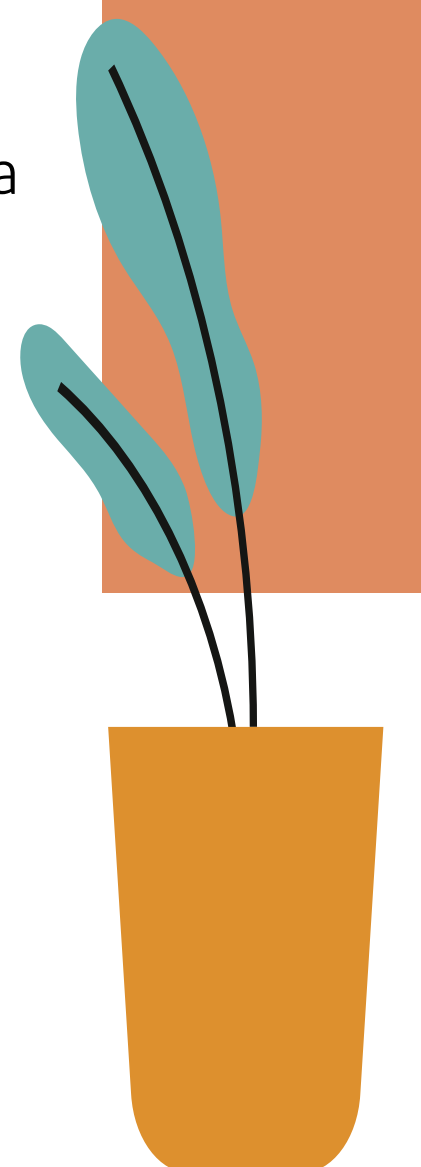
What is the most important risk factor of breast cancer? Female around the age of 45

★ **Treatment:**

Biological therapy for HER2 positive cancers, Hormonal therapy for estrogen receptor positive cancers, chemotherapy for fast growing cancers and grade 3 and more, surgery and radiotherapy complement each other.

Tamoxifen is the classical hormonal therapy it prevents recurrence and protect the other breast, the most important side effects of tamoxifen is endometrial cancer and DVT.

After breast operation it is a must to offer a reconstruction.



Quiz

1- What causes skin tethering (dimpling)?

- A- Serratus anterior
- B- Cooper's ligaments
- C- Internal mammary artery
- D- lactiferous ducts

2- What is the disadvantage of ultrasound use in breast investigation?

- A- Not used in screening and doesn't show microcalcification
- B- It is not the initial examination
- C- Not used in imaging guided biopsies
- D- Distinguish between benign and malignant lesions

3- Phyllodes tumor most commonly metastasize to?

- A-Bone
- B-Brain
- C-Lungs
- D-Blood

4- What is the best time to do Self breast exam?

- A- Every 4 months after period
- B- Once a month after period
- C- Once a month before period
- D- Twice monthly

5- A possible Complication of axillary surgery of radiotherapy?

- A- Lymphoedema
- B- Limb paralysis
- C- Rash
- D- clots

6- A woman finds a hard, nontender breast mass on self-examination. There is no alteration of the mass with menstruation. She is scheduled to undergo a FNA biopsy.

Which of the following is most likely to benefit the patient?

- A-Mammography.
- B-BRCA testing.
- C-Ultrasound.
- D-Bone scan.
- E-PET scan.

- 
- 1-B
 - 2-A
 - 3-C
 - 4-B
 - 5-A
 - 6-A