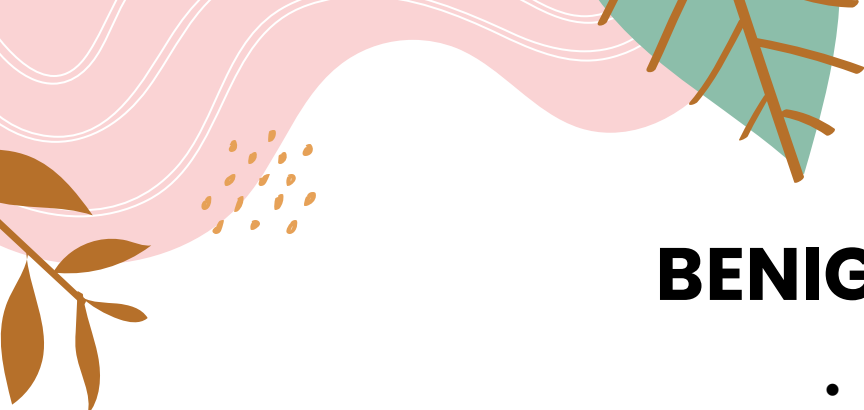




Approach to breast lumps and nipple discharge

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BENIGN TUMORS OF THE BREAST

- Fibroadenoma
 - Phylodes Tumors
 - Intraductal papilloma
 - Breast cyst
 - Breast abscess
- 

Fibroadenoma

- Most common Benign tumor of female breast.
- Age: 20–30 yrs
- often referred to as a 'breast mouse' due to their high mobility
- Etiology: **Increased sensitivity** of **focal areas** of breast tissue **to estrogen**
- **Pathology**
 - **Encapsulated** spherical lesion, composed of **fibrous** and **glandular tissue**
 - Arise from interlobular stroma, stromal cells can be monoclonal or polyclonal
- Pathogenesis:
 1. Hormonal: (increased estrogen sensitivity, OCP(before 20 years of age tend to suffer from fibroadenoma at higher rates than the general population.) & pregnancy) (doesn't occur after menopause)
 2. Genetic: Mediator complex subunit 12 (*MED12*) gene

Types

- **Pericanalicular (Hard)**: Due to proliferation of connective tissue **inside** the **elastic lamina (more common)**
- **Intracanalicular (Soft)**: Due to proliferation of connective tissue **outside** the **elastic lamina**

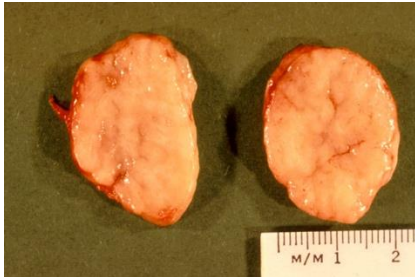
Clinical Feature

- Mostly asymptomatic
- But if symptomatic:
 - firm, **Painless**, slowly growing **solitary mobile lump** in the breast (**Breast mouse**), bilateral
 - Most prominent premenstrually. • Tend to resolve post-menstruation.

Most common site is the upper outer quadrant of the breast

Diagnosis:

* ultrasound, mammogram, FNA



Phylodes Tumors (cystosarcoma Phylodes)

It is a rapidly growing tumor resembling soft fibroadenoma

Incidence : usually around 30 years

Pathology:

- ◆ It is large rapidly growing tumors which may replace the whole breast or reach a huge size .
- ◆ It is classified into benign , border line or malignant

clinical picture :

The patient usually present by large rapidly growing, lobulated, indurated breast mass , may stretch the skin with dilated veins .

Finally , pressure necrosis & ulceration of skin occurs .

The tumor is not attached to the surrounding structures or skin (a probe can pass between the tumor & skin) .



Intraductal Papilloma

- true polyps of epithelium lined breast ducts.
- **Benign** lesions (**not pre-cancerous**)
- **Mostly solitary**, located under the areola (within 4–5 cm of nipple orifice)
-
- Develop within the mammary duct; Composed of breast epithelium supported by underlying stroma and a branching fibrovascular core
- Generally **<1 cm**, can grow up to 4–5 cm
- Age: 30–55
- Clinical presentation : most common is bloody nipple discharge but could come with retro-areolar mass
- Diagnosis : mammography, ultrasound, ductogram.

BREAST CYST

- Occur most commonly in the **last decade** of **reproductive life** as a result of a non-integrated involution of stroma and epithelium.
- Presentation: breast swelling (often bilateral), tenderness, and/or pain.

Clinical Features

1. Often **multiple**, may be **bilateral** and can mimic malignancy.
2. Typically **present suddenly** and cause great alarm; **prompt diagnosis** and **drainage** provides **immediate relief**.
 - • Smooth. • Fluid filled sacs. • They are most commonly found in women between the ages of 35–55 years old
 - Cysts may occur in multiple clusters. • Most are benign, but further investigations should be done when at aspiration: 1. Blood-stained contents. 2. Residual mass following the aspiration. 3. The cyst recurs rapidly.



BREAST ABSCESS

Typically seen in **staphylococcal infections**Q
present with point **tenderness, erythema**, and **hyperthermia**

Related to lactation and occur **within the first few weeks of breastfeeding**Q.

S. aureus are **transmitted** via **suckling neonate** **Lactational**

- Occurs in breastfeeding women. • Usually located peripherally in the breast

Non lactational

- Occurs mostly in young female smokers. • Located more centrally in the breast, under the areola. • Often associated with nipple inversion. • Occasionally, it may produce a discharge through a fistula at the edge of the areola.



Breast cancer

Solid, firm/ hard masses with an irregular outline, unlike the surrounding breast tissue. Usually painless.

Breast cancer incidence increases with age.

BC is rare in males and has a strong genetic predisposition .

Incidence:

- The commonest malignant tumor in females. (35% of malignancies in females).

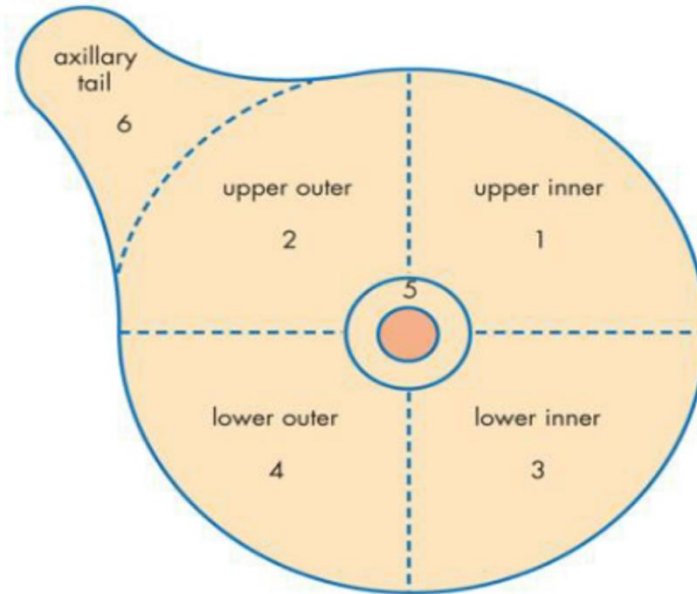
High risk group :

1. Genetic factor : Two genes **BRCA1** & **BRCA2** (These cancers usually occur at a younger age and are bilateral & multifocal)
2. Family history of breast cancer.
3. History of previous carcinoma of breast increase incidence of contralateral breast cancer.
4. Hormonal disturbance & Exogenous **estrogens**
5. Early menarche (below 13) and late menopause (over 50).
6. **Infertile**, nullipara & **lack of lactation**.
7. Obesity : Steroidal hormones are converted to estradiol in adipose tissue.
8. Exposure to radiation
9. Alcohol intake, excessive smoking



Site: 60% in the upper outer quadrant as it contains the largest part of the mammary glands.
Carcinoma of breast usually develops from the epithelium of duct (90 %) or rarely from lobular epithelium (10%)

Right breast



BREAST CANCER IS CLASSIFIED INTO :

NON-INVASIVE :

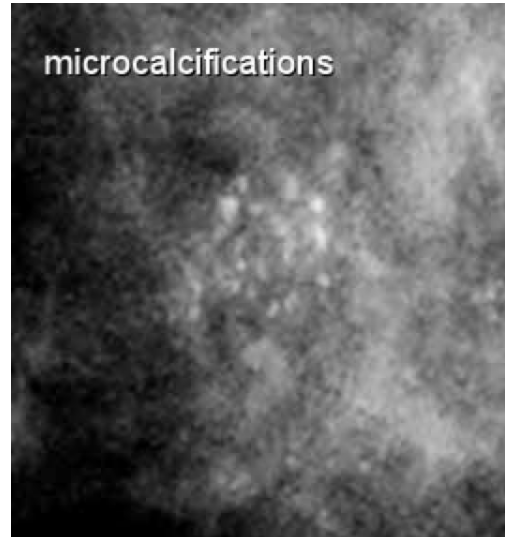
- It is Carcinoma of breast remain localized within the basement membrane without any lymphatic or blood spread.

A-ductal carcinoma in situ : appears as breast lump or micro-calcification by mammography

B-lobular carcinoma in situ : It is usually discovered **accidentally** after pathological examination of excised breast lump

INVASIVE :

1. Invasive Ductal Carcinoma.
2. Invasive Lobular Carcinoma.
3. Medullary Carcinoma.
4. Colloid Mucinous Carcinoma.
5. Tubular Carcinoma.
6. Inflammatory Carcinoma.

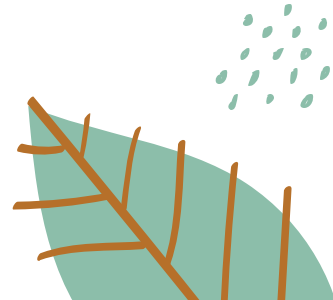


CLINICAL PICTURE and SYMPTOMS:

A) Early:

1. Painless accidentally discovered lump in the breast is the commonest presentation.
2. Pricking pain in the breast.
3. Changes in the level, shape and size of the breast or skin changes.
4. Nipple discharge: such as blood (in ductal carcinoma)
5. Or by routinely screening mammography

B) Late: Manifestations of metastases in (lung , brain , liver , LN and bones)



PHYSICAL EXAMINATION

- General: To detect manifestations of metastases.
- Local: Both sides should be examined starting by the normal side.

a) Breast as a whole : As a result of neoplastic fibrosis:

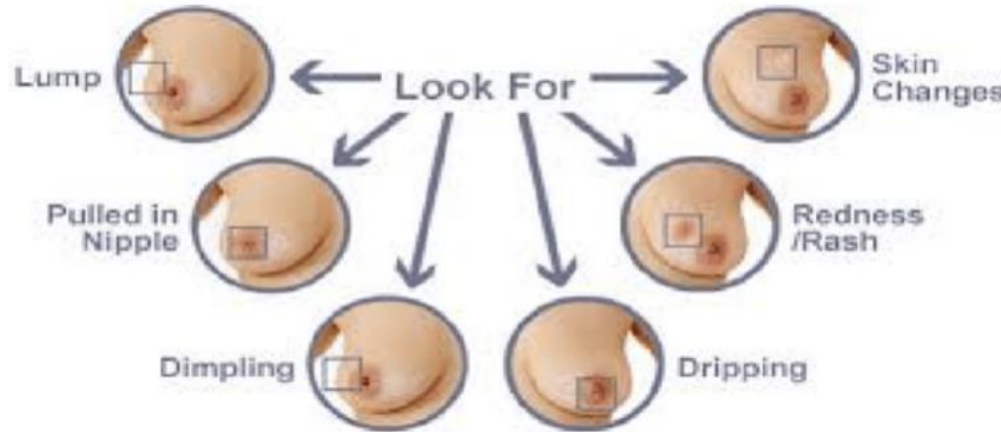
1. The size of the breast is small, atrophic & shrunken, (if there is no fibrosis, the breast is enlarged).
2. The breast is elevated, puckered, deformed & displaced.
3. The above mention signs are more evident on raising the arms or on leaning forwards.

b) Nipple & areola:

1. Recent unilateral acquired retraction of the nipple.
2. Mal-directed nipple (normal: forewords, lateral & slightly downwards).
3. Squeeze the nipple to detect nipple discharge
4. Malignant eczema (paget's disease) with erosion of the nipple and areola



- Skin: Show dimpling, puckering, dilated Vs, peau d'orange, malignant nodules, malignant ulceration, Redness, oedema of the skin may suggest inflammatory carcinoma
- Breast mass: A malignant breast lump is usually by the flat of the hand as stony hard, irregular with restricted mobility & fixed to surrounding structures.
- Draining lymph nodes: palpate the axillary, infraclavicular & supraclavicular L.Ns. on both sides. Malignant deposits are painless, hard, discrete first mobile but in advanced cases become painful, matted & fixed.



STAGING (TNM staging of breast cancer)

TABLE 27-1 American Joint Committee on Cancer TNM (Tumor, Node, Metastasis) Staging for Breast Cancer

Stage	Description
Tumor	
TX	Primary tumor not assessable
T0	No evidence of primary tumor
Tis	Carcinoma <i>in situ</i>
T1	Tumor ≤ 2 cm in greatest dimension
T1 mic	Microinvasion ≤ 0.1 cm in greatest dimension
T1a	Tumor >0.1 cm but not >0.5 cm
T1b	Tumor >0.5 cm but not >1 cm
T1c	Tumor >1 cm but not >2 cm
T2	Tumor >2 cm but <5 cm in greatest dimension
T3	Tumor >5 cm in greatest dimension
T4	Tumor of any size with direct extension into the chest wall or skin
T4a	Extension to chest wall (ribs, intercostals, or serratus anterior)
T4b	<i>Peau d'orange</i> , ulceration, or satellite skin nodules
T4c	T4a + T4b
T4d	Inflammatory breast cancer



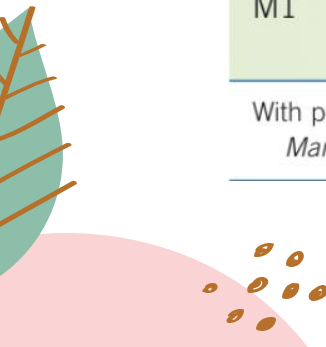
Regional Lymph Nodes

NX	Regional lymph nodes not assessable
N0	No regional lymph node involvement
N1	Metastasis to movable ipsilateral axillary lymph nodes
N2	Metastases to ipsilateral axillary lymph nodes fixed to one another or to other structures
N3	Metastases to ipsilateral internal mammary lymph node with or without axillary lymph node involvement, or in clinically apparent clavicular lymph node.

Distant Metastases

MX	Presence of distant metastases not assessable
M0	No distant metastases
M1	Existent distant metastases (including ipsilateral supraclavicular nodes)

With permission from Fleming ID, Cooper JS, Henson DE, et al., eds. *AJCC Cancer Staging Manual*, 5th ed. Philadelphia, PA: Lippincott Williams & Wilkins; 1998.



Complications of breast cancer :

1. Spread:

I. Direct spread:

- a) To the surrounding breast stroma , Cooper's ligaments & lactiferous ducts .
- b) To the deeper structures (to pectoral fascia , pectoral muscles, serratus muscle , ribs
- C) Spread to pleura & lung metastases.

D) To the skin, nipple and areola leading to the followings

- 1. Skin tethering due to invasion of cooper's ligament
- 2. Skin fixation is caused by direct infiltration
- 3. Dimpling and puckering of the skin infiltration & shortening of Cooper's ligaments
- 4. Dilated veins on the skin due to increased vascularity of the breast
- 5. Ulceration & fungation

6. Peau d'orange:

-A hard thick non-pitting oedema of the skin which is marked in the dependent part i.e the lower 1/2 of the breast.

-It is due to obstruction of the skin lymphatics by malignant cells & fibrosis .

-Skin swells and sweat & sebaceous glands producing pits that give the skin the orange appearance.

-It is not pathognomonic for carcinoma.

-It becomes more obvious by squeezing the skin gently

7. Skin nodules: near or far from the tumour due to retrograde lymphatic spread, it is a very late sign.

8. Cancer en cuirasse: (very late).

- The skin is very hard, thick, fixed and pigmented .

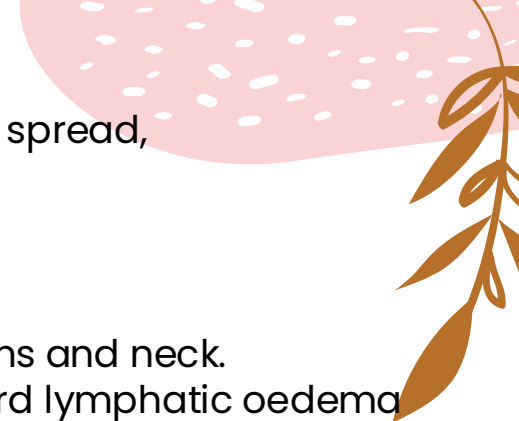
- It is not localized to the breast but it may extend to the chest , trunk, arms and neck.

- This is due to malignant infiltration and fibrosis of the skin as well as hard lymphatic oedema due to obstruction of skin lymphatics.

9. Nipple is retracted and elevated

10. Paget's disease of the nipple.

11. Redness of the skin in inflammatory carcinoma



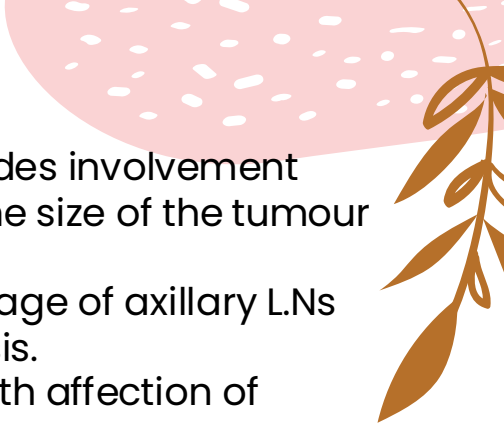
II- Lymphatic Spread: By both permeation and embolization.

The lymph nodes draining breast :

1. 75% to axillary L.Ns mainly pectoral LNs
2. 20% to internal thoracic (parasternal) L.Ns.
3. 5% to infra-clavicular, supra-clavicular, subscapular drain to posterior intercostal L.Ns.

Importance of lymphatic spread of carcinoma of breast :

- 1- L.Ns are histologically affected by malignancy, distal organ micro-metastases are likely to be present ,Therefore L.Ns affection is an important prognostic factor
- 2- Patients with histologically negative axillary nodes have better prognosis than patients with histological positive nodes.
- 3- The prognosis is inversely related to the number of involved axillary nodes.
- 4- Prognosis is inversely related to the level of axillary L.Ns involvement.
- 5- Metastatic involvement of axillary nodes progress regularly from level I (L.Ns. inferior to lower border of pectoralis minor),then to level II.(LNs directly deep to pectoralis minor),then to level III.(LNs superior to pectoralis minor); skip metastases are recorded only in 2% of cases.
- 6-Sentinel lymph node is the first node receiving lymph from the 1ry tumour .
- 7-Parasternal L.Ns involvement are more common from inner or central tumours or with large tumours

- 
- 8-Axillary L.Ns involvement are much more common than parasternal nodes involvement
 - 9-The incidence of positive axillary or parasternal nodes increases with the size of the tumour and with the local invasiveness of the neoplasm.
 - 10-Supraclavicular or infraclavicular L.Ns involvement represents a late stage of axillary L.Ns involvement, systemic disseminated disease and carries a grave prognosis.
 - 11-Oedema of arm represents a late stage of axillary node involvement with affection of supraclavicular or infraclavicular L.Ns

III- Blood spread:

- Blood spread to the lungs, liver, brain, bones (mainly to ribs, sternum, thoracic spines , skull & long bones).
 - Previously it was thought that breast cancer spreads locally at first, then by lymphatics & lastly by blood stream.
 - This view is no longer accepted, and it is now well established that carcinoma of the breast may spread by the blood stream very early producing micrometastases in distant organs.
 - The tendency of breast cancer to metastasize to the spine is explained by the free communication of posterior intercostal veins with vertebral venous plexus.
- 



IV) Transperitoneal spread :

By seeding or from liver metastases or peritoneal lymphatics → malignant

ascites, Krukenberg's tumour (malignant cells implanted on the ovaries → bulky tumour), nodules in the Douglas pouch, omentum and parietal peritoneum.



Treatment and management of breast lumps

Treatment of breast mass differs based on the type of the mass
whether it's a benign or malignant



1) Benign lesions

- **Fibroadenoma**

Often, fibroadenomas need no treatment (conservative). But, in some cases it might need Excision and biopsy (large, grows quickly or causes symptoms)

Phyllodes tumour (a rapidly growing tumour resembling soft fibroadenoma) :

If small → excision biopsy with 1cm safety margin

If large → simple mastectomy



Intraductal Papilloma

If bleeding is localized to one duct → **Microdochectomy** and biopsy through **Circumareolar incision**.

When there is bleeding from multiple ducts → cone excision of the major ducts and biopsy.



Breast cyst

The majority of simple cysts aspirated disappear after **aspiration**, and the treatment is considered complete. Follow-up exams and imaging vary based on the cyst and findings from aspiration or biopsy. **Most cystic breast lesions are benign** and, therefore, do not require any oncological treatment. **The rare malignant cystic lesions** are treated as breast cancer would be treated (The treatment is a combination of surgical resection and adjuvant treatment); The adjuvant treatment includes hormonal therapy, chemotherapy, radiotherapy, immunotherapy, and the use of biological agents

2) Breast cancer

- Assessment of the patient involving surgical, medical, radiotherapy and oncology opinions to plan the best treatment for each case .
 - The patient and her family should be involved in decision making.
 - Breast cancer has 2 compartments :
 - 1) Loco-regional disease :
 - It is formed of the 1ry tumour and regional lymph nodes .
 - Surgery and radiotherapy are effective in treatment of loco-regional disease.
 - 2) Systemic disease :
 - It is formed of occult distal micro-metastases.
 - Hormonal therapy , chemotherapy and target therapy are effective in treatment of systemic disease.



- Treatment of breast cancer depends mainly on staging & risk factors .
 - Recently the patients are classified into 3 categories as follows :

I. **Early breast cancer**

- A) Surgical treatment
- B) Post-operative radiotherapy
- C) Adjuvant therapy
- D) Follow up of the patient

II. **Locally advanced breast cancers**

- A) Neo-adjuvant therapy
- B) Surgical treatment
- C) Post-operative radiotherapy





III. Advanced breast cancers : (Metastatic breast cancer)

Mainly hormonal therapy , chemotherapy & target therapy but radiotherapy or surgery are of secondary value

Aim : Palliation and improving quality of life



Nipple discharge

Nipple discharge : any fluid that's secreted from the nipple , whether with or without manipulation.





Types of nipple discharge



1) lactation

- most common physiologic discharge, requires no treatment
- milky discharge
- happens in breastfeeding women and can continue up to two years after cessation.
- a small amount may also be present in parous , non- lactating women .

2) galactorrhea

- milky discharge which is unrelated to breastfeeding.
- 
- 

Causes of galactorrhea include :-

A) *Mechanical* :

- due to continued stimulation of the nipples

B) *drug induced* :

By interference of the hypothalamic-pituitary axis in one of the following mechanisms

- dopamine depletion :- as tricyclic antidepressants or benzodiazepines
- blocking dopamine receptor :- as metoclopramide and haloperidol
- having an estrogenic effect : as digitalis

C) *Spontaneous* :

- in non lactating women , it may be due to a prolactinoma , which is associated with amenorrhea
- diagnosis of this includes:
 - 1- measuring serum prolactin levels
 - 2- CT or MRI scan of pituitary gland
- it is treated by **bromocriptine** or resection of the prolactinoma.



3) pathological nipple discharge

- comparison of physiological and pathological:

Nipple discharge	physiologic	pathologic
spontaneous	induced	spontaneous
Side	bilateral	unilateral
color	White, green, yellow	Bloody, serous, clear or watery
No. of duct orifices	Multiple	Single



Single duct bloody discharge

Causes of bloody discharge

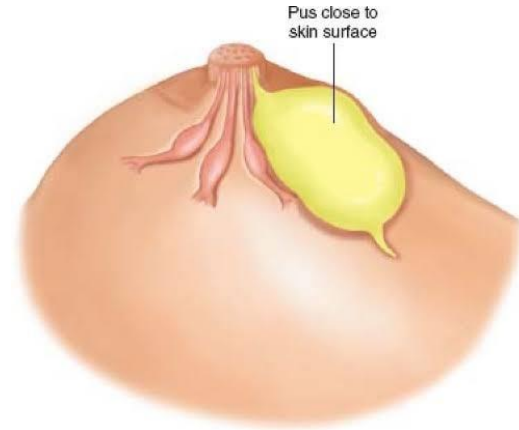
- 1) 10% have malignancy as the underlying cause
- 2) benign intraductal papilloma
- 3) fibrocystic changes
- 4) some lactating women may experience bloody discharge due to proliferation of epithelium associated with breast enlargement.

5) breast abscess:-

- its a painful collection of pus that forms in the breast

1- nonpuerperal abscess

- may be a complication of mastitis
- associated with an infection with
 - a) staphylococcus :-
 - which is localized and located deep in breast tissue
 - b) streptococcal :-
 - diffuse superficial involvement



Clinical presentation:-

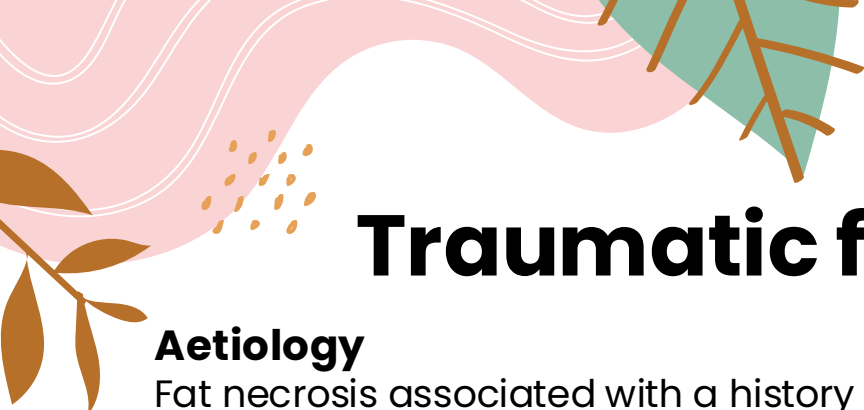
- 1- pain in the peri/retro-areolar area
- 2- bloody or pus discharge
- 3- inversion of the nipple

Treatment:-

local wound care + IV antibiotics + surgical drainage

* if persistent or recurring do biopsy to exclude cancer.





Traumatic fat necrosis

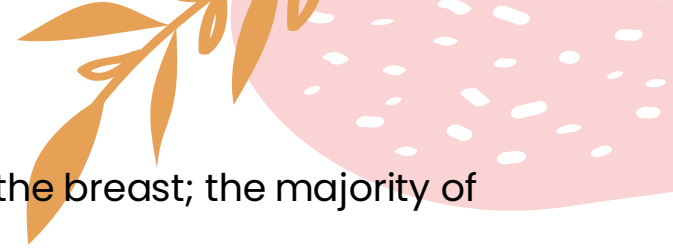
Aetiology

Fat necrosis associated with a history of trauma (seat belt injury) .
Its importance lies in its ability to mimic breast carcinoma

Clinical features

commonly presents with a painless, irregular, firm lump in the breast . It is often associated with skin thickening or retraction . The lump usually decreases in size with time. Ultrasound often reveals characteristic features, but mammography may show non-specific changes or a dense, spiculated mass that mimics carcinoma. The diagnosis can be confirmed through core biopsy.





Acute bacterial mastitis

The most common and most important acute inflammation of the breast; the majority of cases occur during lactation.

Lactational mastitis :

1. The most common causative organism is **Staphylococcus aureus**.
2. it presents as a swollen, erythematous, and tender breast (purulent discharge from the nipple is uncommon.)
3. In the early cellulitic phase, the treatment is antibiotics. The frequency of breastfeeding or pumping should be increased. Approximately 25% progress to abscess formation.
4. Breast abscesses occur in the later stages .

Diagnosis:

The diagnosis is made by failure to improve on antibiotics, abscess cavity seen on ultrasound, or aspiration of pus. Treatment is cessation of breastfeeding and surgical drainage.





Duct ectasia

An involutional change in the ducts associated with the menopause. The terminal ducts behind the nipple become dilated (ectasia) and engorged with secretions. (discharge commonly yellow, brown or green)



History Taking:

- in females it may be normal or pathological but in males it always pathological
- mostly in adults
- Rule out pregnancy if applicable.

A. Character of Discharge:

- Color: Clear, milky, yellow, green, brown, bloody (if it is red or bloody, it may be a cause for concern about cancer)
- Consistency: Watery, thick, or sticky.
- Amount
- whether it is a spontaneous or with nipple stimulation
- Bilateral or Unilateral: Unilateral discharge is more concerning, especially if it's from a single duct.

B. Associated Symptoms:

- Breast Pain
- Breast Lumps: Presence of any palpable mass
- Skin Changes: Erythema, dimpling, or thickening of the skin.
- Nipple Changes: Retraction, scaling, or ulceration.
- Systemic Symptoms: Fever, weight loss, or signs of hormonal imbalance (irregular periods, galactorrhea).

C. Medication History:

- Medications that may cause discharge (e.g., oral contraceptives, antipsychotics, antidepressants).



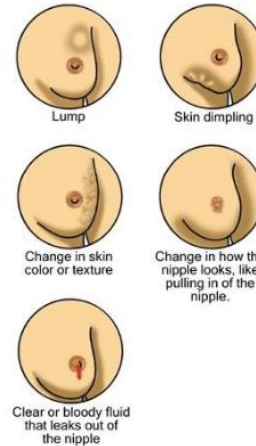
physical examination:

Breast examination should be conducted in a well-illuminated room, on an examination bed, in the presence of a chaperone, whose name should be recorded. Ask your patient to undress to the waist and explain that you will be examining them sitting up as well as lying down.

Inspection

During the inspection of the breasts observe for any asymmetric findings, especially:

- Abnormalities in the overall shape of the breasts
- Changes in skin color
- Skin dimpling / retractions
- Spontaneous nipple discharge



1- First inspect the breasts while the patient is sitting upright. Ask the patient to relax both upper extremities by gently placing her hands on the thighs.



2- ask the patient to move both arms above the head



3- ask the patient firmly pressing both hands against the hips

Palpation

Palpation of the breasts starts with the patient sitting upright on the examination table. This position is exactly the same as the one used during inspection. Both hands lie relaxed on the patient's lap.

Then ask the patient to lie supine on the examination table with both hands behind the head and repeat the palpation on both sides

Palpation Technique

It is important to keep in mind the following points about the correct palpation technique:

- Palpation is best done by using the finger pads rather than the fingertips

There are different ways to move across the breast. Some clinicians prefer to move in circles starting from the nipple and going towards the periphery. Others prefer to move following imaginary lines that divide the breast in wedges, always from the nipple outwards.



- One hand palpates the breast for any abnormalities while the other one sustains and stabilizes the breast
- Remember to press the nipple against the chest wall to elicit any discharges if not spontaneously present
- It is important to thoroughly and systematically palpate all the areas of the breast, including **the tail of spence** in the upper outer quadrant



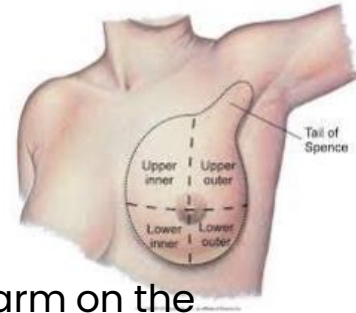
Circles



Wedges



Lines



Lymph Node Exam

With the patient sitting upright on the examination table support the arm on the examined side and ask the patient to fully relax the arm. In this way the skin of the axillary region will be completely relaxed making it easier to appreciate any enlarged lymph nodes



Diagnosing the cause of nipple discharge typically involves a combination of the following methods:

Clinical History and Physical Examination: As previously mentioned, a thorough history and physical exam are essential for initial assessment.

Imaging Studies:

Mammography: Often used to screen for breast abnormalities, especially in women over 30.

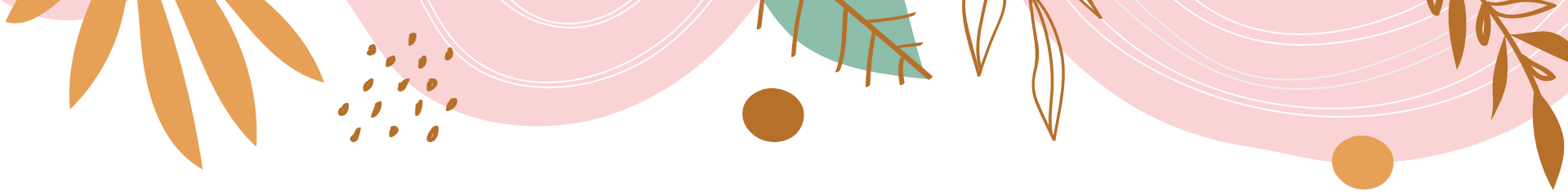
Ultrasound: Helpful in assessing any underlying masses or abnormalities in the breast tissue, particularly in younger women.

Laboratory Tests:

Cytology: Fluid from the nipple discharge may be collected and examined under a microscope to check for abnormal cells.

Hormonal Tests: Blood tests can evaluate hormone levels, particularly if the discharge is milky or if there are other signs of hormonal imbalance.

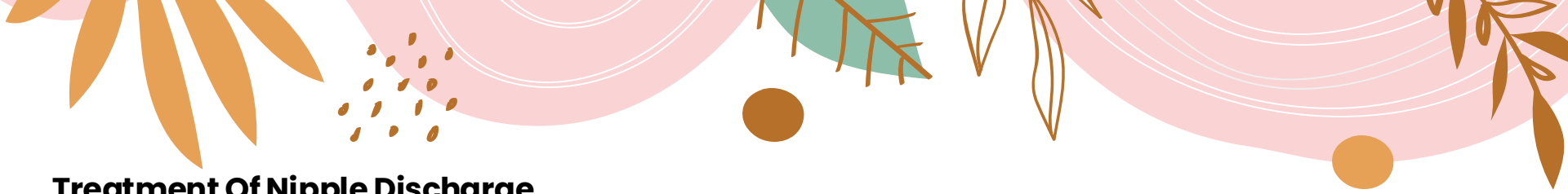
Ductography: A specialized imaging test where a contrast dye is injected into the milk ducts to visualize blockages or abnormalities.



Biopsy: If a suspicious lump or area is found, a biopsy may be performed to assess for malignancy or other conditions.

Observation: Sometimes, simply monitoring the discharge over time can provide insight into its cause, particularly if it's spontaneous and non-bloody.

Each case is unique, so the specific diagnostic approach may vary based on individual symptoms and risk factors.



Treatment Of Nipple Discharge

The treatment of nipple discharge depends on its underlying cause. Here are some common approaches based on different scenarios:

Physiological Discharge:

Observation: If the discharge is benign (like a clear or milky discharge without other symptoms), no treatment may be necessary.

Hormonal Imbalance:

Medications: If hormonal issues are causing the discharge (such as hyperprolactinemia), medications like bromocriptine or cabergoline may be prescribed to normalize hormone levels.

Infections:

Antibiotics: If the discharge is due to an infection (like mastitis), antibiotics may be needed.

Duct Obstruction:

Ductal Excision: If a blocked duct is causing the discharge, a surgical procedure may be necessary to remove the obstructed duct or any associated lesions.



Benign Conditions:

Surgery: For benign conditions like intraductal papilloma, surgical removal may be recommended.

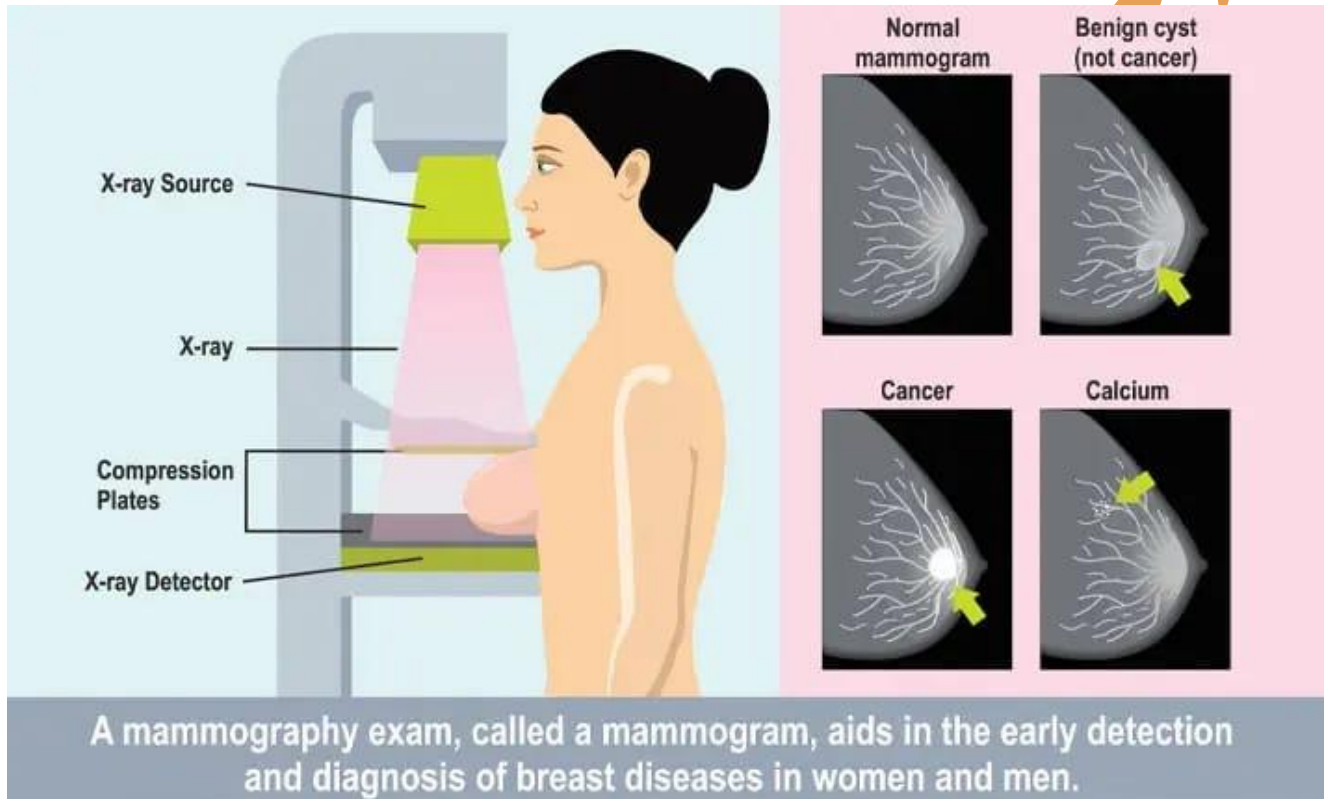
Malignant Conditions:

Oncology Referral: If there is a suspicion of breast cancer, further evaluation and treatment may involve surgery, radiation, or chemotherapy, depending on the diagnosis.

Lifestyle Modifications:

Avoiding Certain Medications: If the discharge is medication-induced, discussing alternatives with a healthcare provider may be beneficial.





breast imaging

a- mammograms

- they are low energy x-rays used to examine breast tissue
- we have two uses for mammograms:

1- screening :

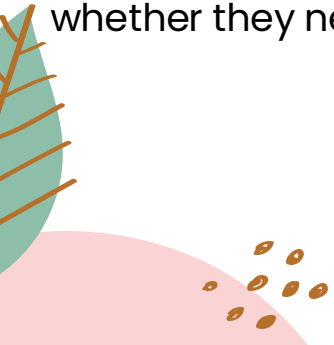
- * for asymptomatic patients who are 40 years old or older
- * for those at high risk , we start screening at age 25-30 or 10 years earlier than the age of diagnosis of the youngest relative.

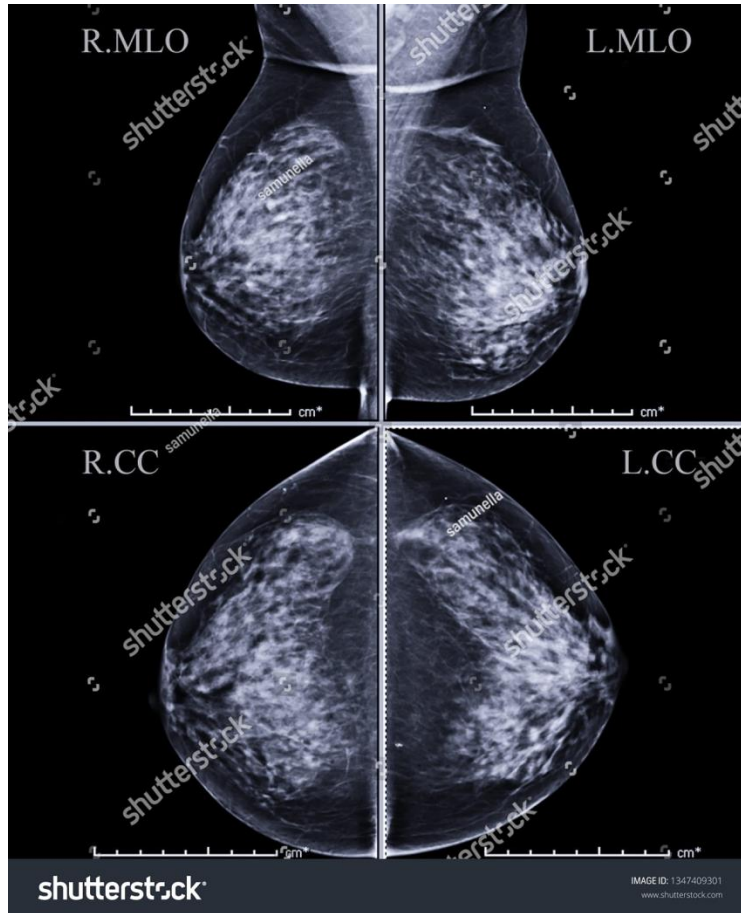
* we use two views for screening

1- medio-lateral-oblique (MLO)

2- craniocaudal (CC)

* after reading the mammogram, we use the BI-RADS classification to assess the lesions and whether they need additional processes



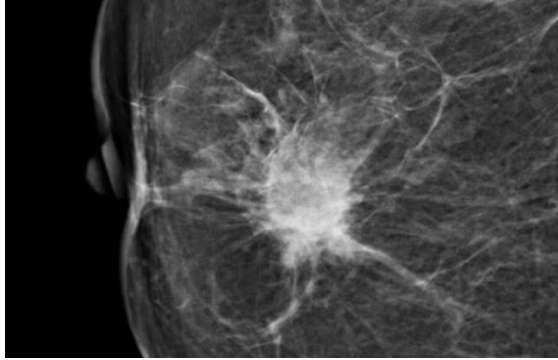


Final Assessment Categories

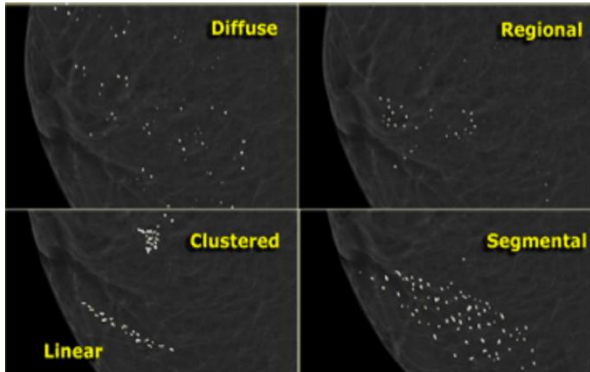
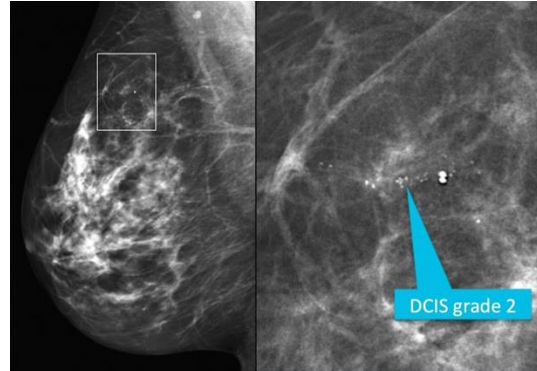
Category		Management	Likelihood of cancer
0	Need additional imaging or prior examinations	Recall for additional imaging and/or await prior examinations	n/a
1	Negative	Routine screening	Essentially 0%
2	Benign	Routine screening	Essentially 0%
3	Probably Benign	Short interval-follow-up (6 month) or continued	>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

some malignant findings :-

- spiculated mass



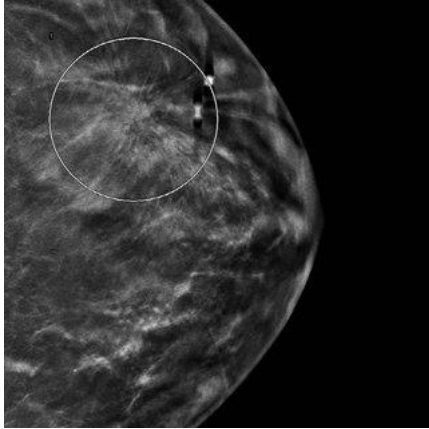
- clustered, microcalcifications



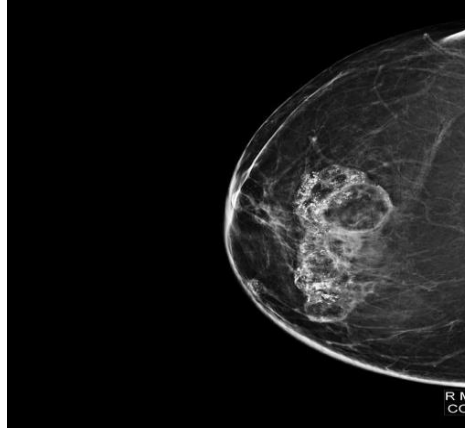
architectural distortion

-some benign findings:-

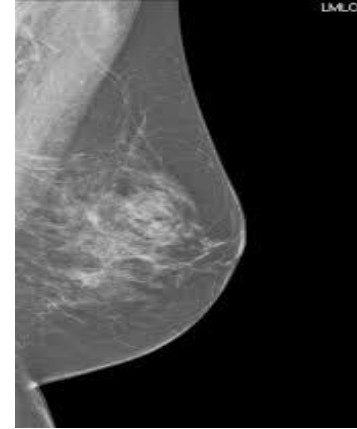
radial scar



fat necrosis



milk of calcium



* we cannot differ between cysts or mass on mammograms, so we have to use ultrasound or MRI

Diagnosis

- in symptomatic patients or those who have abnormalities on mammograms.
- we use two additional views :-
Spot compression + magnification
- NOTE :- if we have a palpable mass on PE but mammogram is normal , DONT exclude malignancy, but order an ultrasound , biopsy or MRI.

Ultrasound (US)

- we use this method to determine whether the finding is a mass or a cyst
 - it can also determine the size , contour and texture.
 - we use it alongside mammograms to improve diagnostic sensitivity up to 90%+
- Especially in:-
- 1- younger patients who have denser breast tissue
 - 2- those with a known cancer , to detect additional lesions or to know the extent

MRI

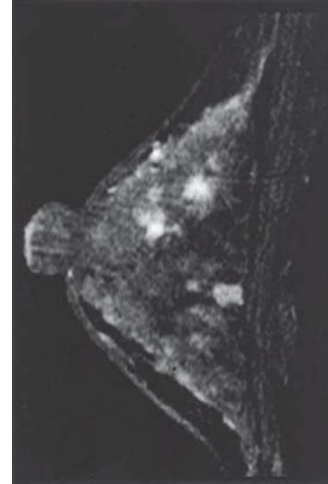
1- screening

In those with :-

- known BRCA mutations
- chest wall radiation between the age of 10-30

2- diagnosis

- determines extent
- detects multicentric disease in dense breast
- assess contralateral breast
- evaluate patients with axillary metastasis with an unknown primary .
- assess chest wall involvement
- in cases where mammograms and US are inconclusive



However , they have a high false positive rate and patients should be counseled about this

References :

- Washington Manual
- Surgery Essence
- Browse's Introduction to the Symptoms & Signs of Surgical Diseases