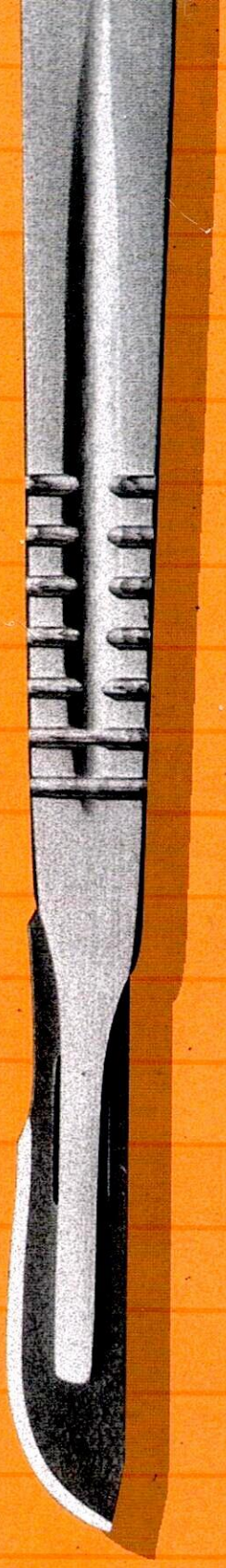
SURGERY



PrepLadder

NEET SS

VOLUME 1

PREFACE

Dear Dreamer,

Pat your back and reward yourself, today you've taken an important step towards reaching your dream. Mark Twain said, "the secret of getting ahead is getting started". You have started in the right direction.

The next few months until your targeted exam or exams are crucial. Every moment counts and each step you take now, will help you reach your goal, your dream.

PrepLadder is your partner in this journey. We are in this together. So, don't worry, do not stress. Just focus on your preparation and stay positive. Set daily targets, achievable and realistic ones. If you pass the target, celebrate. However, if you miss a daily target, forgive yourself, move on and do better the next day.

Always remember that you are special and unique. Do not compare your preparation, your speed, your abilities with others. Believe us, it doesn't help.

Practice a lot. Solve the QBank. Take Grand Tests. Review your performance. But don't let ranks and results drag you down. Rather use them as a guiding light to know your strengths and weaknesses, to increase your speed and accuracy, and to get yourself ready for the exam day.

If you have a doubt or a question, ask us. We are here.

Lastly and most importantly. take care of yourself. You and your health are precious. So, keep up with exercise, eat healthy, get enough sleep and care for yourself.

We're behind you, cheering you on to the finish line. You might be feeling stressed, overwhelmed, and so tired, but you're nearly there. Give it everything you've got, and know that whatever happens next, you've got what it takes for the life you want. You are a Champion.

Own Your Dream
Team PrepLadder

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SURGERY VOLUME - 1

1. BREAST & ENDOCRINE

2. GENITOURINARY

3. TRANSPLANTATION

4. TRAUMA

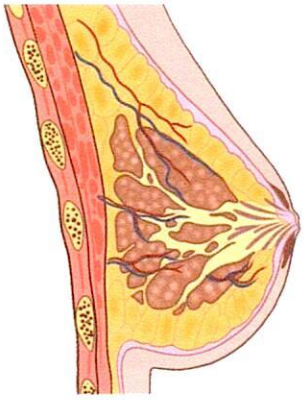
5. MISCELLANEOUS

BREAST & ENDOCRINE

1 BREAST

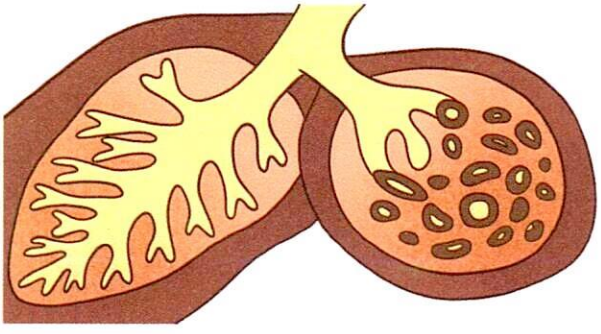
Anatomy

00:00:14

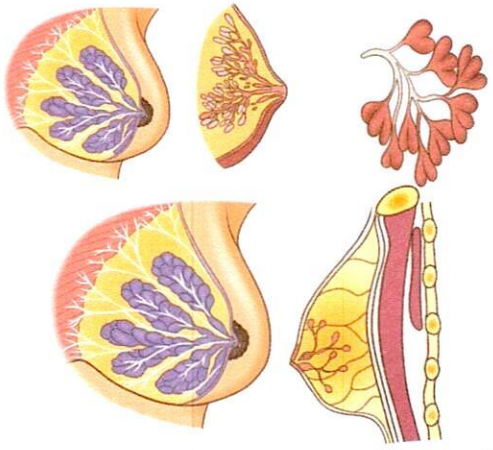


- Breast is a modified sweat gland.
- The vertical extent of the breast is from the second rib to the sixth rib.
- The horizontal extent of the breast is from the sternal edge to the anterior or mid-axillary lines.
- Breast parenchyma is made up of glandular tissue and supportive tissue.
- Glandular tissue
  - Compose of lactiferous lobe and lactiferous duct.
  - Lactiferous lobe are made up of lactiferous lobules.
  - Lobules in turn are made up of acini.
  - Lactiferous lobules is called as the functional unit of the breast .
  - Lobules are drained by small ducts into larger ducts.
  - Larger ducts drains into Major Lactiferous duct.
  - 15 to 20 lactiferous ducts are opening into each nipple.

- **TDLU**



  - TDLU stands for terminal duct lobular unit.
  - It is the intralobular portion of the terminal duct.
  - Terminal duct lobular unit is the most active part of the breast tissue and responds to all hormones like estrogen, progesterone, prolactin, etc.
  - Most breast cancers and most breast diseases arise from the terminal duct lobular unit.
  - 50% of the terminal duct lobular unit is in the upper outer quadrant, and 20% of the terminal duct lobular unit is in the Central quadrant.
  - Maximum breast cancer arises from the upper outer quadrant because of the maximum number of the terminal duct lobular unit.



- **Supportive tissue**
  - It is composed of suspensory ligaments of cooper.
  - It present more in the lower part of the breast.
  - Supportive tissue -Suspensory ligament of cooper, lot of fat, subcutaneous tissue, vessels, Adipose tissue and lymphatics.

- **Nipple and areola complex** 00:06:28
  - Sappey's muscle - Involuntary circular muscle fibers, function - nipple erection.
  - Myerholtz muscle which is the longitudinal muscle fibers, function - nipple retraction.
  - Areolar epithelium- sweat and sebaceous glands, and it is called as Montgomery tubercles.

Lymphatic Drainage

00:07:38

- The lymphatic skin of over the breast drains the entire layer of the breast except the nipple-areola complex.
- From outer quadrants drain into axillary lymph nodes and from inner quadrants drain into Internal mammary lymph nodes.
- In breast cancer, tumor cells can spread via superficial lymphatics and lead to nodules in the skin and can spread to contralateral site.

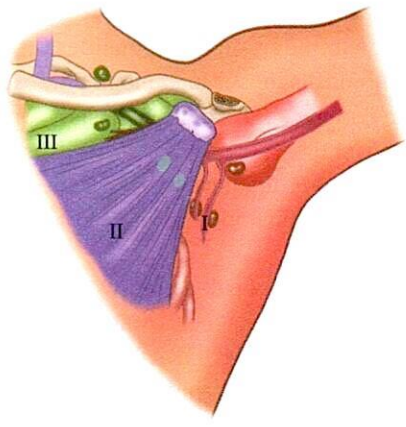
- Lymphatics of the breast parenchyma.
  - Communicate with another set of lymphatics which is located under the nipple-areola complex and thus called the lymphatic plexus of Sappey.

Lymph Nodes

00:09:40

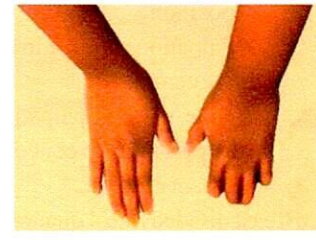
- 80% of the lymph nodes drains into axillary group
- 20% of the lymph nodes drains into internal mammary group. Present in 1st 6 intercostal spaces.
- Axillary group of lymph nodes includes the following:
  - Anterior: It is situated along the lateral thoracic vessels.
  - Palpated along the anterior fold of Axilla.
  - It is also called a pectoral group of lymph nodes. Majority of breast lymphatics are the anterior axillary lymph nodes.
  - Lateral: Lateral group of lymph nodes is situated along the axillary vein and palpated along the neck of the humerus.
  - Either drain into central group of lymph nodes or the apical group of lymph nodes.
  - Central or Medial :- Situated in the center of the fat of the axilla.
  - Most commonly Palpable group of lymph nodes.
  - Posterior group: It is also called the subscapular group of lymph nodes.
  - Palpated along the posterior fold of Axilla.
  - Rotters: Also called as Inter pectoral group of lymph nodes.
  - Lie between the pectoral major and pectoralis minor muscles.
  - Apical (infra/sub clavicular): Lies in the medial tendon of the Pectoralis minor or lateral to the first rib.
  - All axillary lymph nodes drain in Apical axillary lymph nodes.
  - Apical lymph nodes drain via efferents to sub clavian trunk.

Axillary lymph nodes levels



- **Levels**: Divided in realtion to the Pectoralis minor Muscle.
  - Level 1: Lateral to lateral border of pectoralis minor. It includes the anterior, posterior, and lateral groups of lymph nodes.
  - Level 2: Lymph nodes includes the Central and Rotters group of lymph nodes. It is the lymph nodes lie between the medial and lateral border of the pectoralis minor.
  - Level 3: Any lymph nodes that lie medial to the medial border of the pectoralis minor. Apical or infraclavicular lymph nodes form the level 3 level.
- **Amastia or Amazia:** It is the absence of breasts.
  - Poland's syndrome is associated with the amazia.

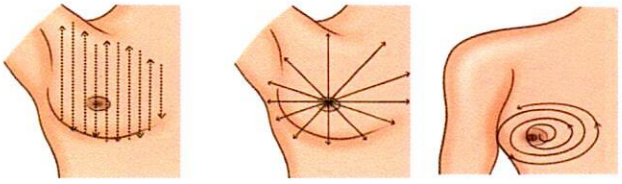
  - Poland's syndrome is - Amastia on one side with the absence of the sternal portion of the pectoralis major on same side + Rib / coastal cartilage defects.
    → Symbrachydactyly is present.
  - Managment - Breast Reconstruction with Latissmus dorsi Myocutaneous flap + Silicone implant.



    → Symbrachydactyly - Ipsilateral Shortening and Webbing of digits of the hand.
- Polymastia: It is the presence of accessory breasts.
  - The most common site of the accessory breast is the axilla.

Investigation 00:19:55

- For any patient with breast lumps, nipple discharge, or other related problems, the evaluation is done by Triple Assessment. which includes the following steps:
  - Clinical examination
    - → History taking
    - → Age
    - → Physical examination
  - Radiological imaging
  - Pathological investigation
- It is important to have the evaluation with the same sequence
- Triple assessment shows a positive predictive value for 99.9% of Breast cancer patients.
- **Methods of Breast Palpations are:-**



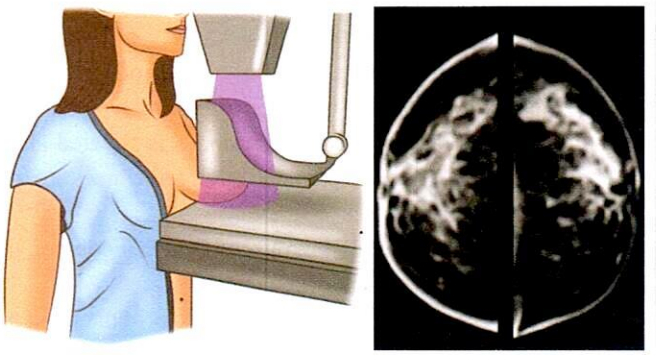
  - Vertical stripe method
  - Horizontal stripe method
  - Dial A clock method-segmental palpation of breast with pad of middle, ring and index finger.
    - → Highest point in upper quadrant of breast - 12'O clock lie just below midclavicular line.
    - → Lowest point in Inframammary crease - 6'0 clock position.
    - → Palpations is done in circular motion from periphery to the centre.
  - Circular method palpation of breast from centre(nipple) to the periphery in concenteric circles.
  - Quadrant method.
- Breast divided into 4 quadrant :-
  - Upper outer quadrant
  - Upper inner quadrant
  - Lower outer quadrant
  - Lower inner quadrant
- 4 quadrants are palpated in Clockwise or Anticlockwise direction.

Radiological Imaging 00:27:31

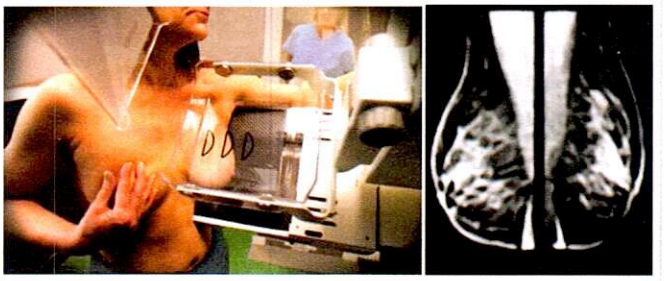
- 1st line investigation
  - Mammography /USG
    - → Mammography - >40 year of age.
    - → Less dense - less glandular and stromal tissue.
    - → More fat - fat acts as the background for better clearance and vision.
  - USG - <40 year of age.
    - → Dense breast - more glandular and stromal tissue.
    - → Less fat

Mammography

- Mammography: It is the x-ray of the breast.
- It generates low voltage and high amperage x-rays.
- Radiation dose: 0.1 to 0.2cGy(1-2 MGy).
- Compression of the breast - Decrease thickness of tissue to get better image quality and radiation dose is decreased. Breast compression is done in two ways : craniocaudal (CC) and mediolateral oblique (MLO).
  - CC provides better-quality images due to greater compression and can provide view of medial quadrant .



  - MLO view provides visualization of the maximum of the breast tissue. Visualizes Upper outer quadrant ,axillary tail of Spence, Axillary lymph nodes. It is the most important view for mammography as it visualizes the maximum tissue.



Digital mammography

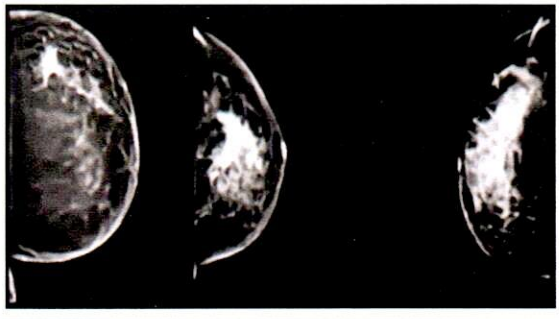
  - Digital mammography allows better visualization of the dense breast in younger patients.
  - Digital mammography is considered the standard screening and diagnostic mammographic examination.
- 3D mammography /3D Tomosynthesis - provides better visualization for the younger female with dense breasts.
  - Disadvantage - Radiation dose is higher.
  - Screening mammography reduce the mortality of breast cancer by 33%.
  - Mammography can be done for two purposes: screening Mammography and diagnosis Mammography.
  - SCREENING MAMMOGRAPHY - Modality of choice for screening of breast cancers, with average risk female starting of mammography with 40 yrs of age.

- In high risk women, mammography combined with MRI and started at the age of 30-35 years. but not done in < 30 year of age.

- Diagnostic Mammography - mammography is the initial imaging modality is done in females with symptoms like breast lumps, nipple discharge and female > 40 years of age.
- **Two additional views for diagnostic purpose mammography:**
  - 90° Lateral view, helps in locating the abnormalities better.
  - Spot compression view helps in delineating the abnormalities better.

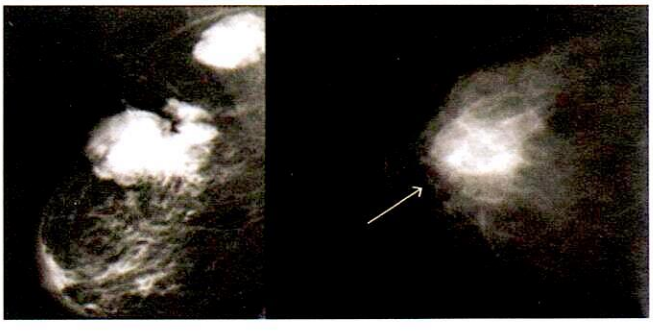
Features of Benign Vs. Malignant on mammography 00:38:03

- Benign
  - Smooth contour
  - Regular, well-defined margins
  - Macrocalcification
  - Halo around lesions
- Malignant
  - High density
  - Spiculated mass
  - Irregular borders or margins
  - Clustered microcalcification
  - Asymmetric breast thickening
  - Skin thickening
  - Nipple retraction
  - Architectural distortion
  - Lymphadenopathy.



Refer Table 1.1

USG 00:46:47



- The advancement in USG helps in the following:
  - Differentiate between solid and cystic nature
  - It is 1st imaging modality in the women of < 40 years of the age.
  - It is the first imaging modality done in Pregnant and lactating females as the breast is extremely dense.
  - Evaluation of the axilla in N0.

MRI 00:48:21

- Preferred - Contrast-enhanced MRI and should have a dedicated breast coil, should have capability to do breast biopsies.
- Indications
  - Assessment of patients with axillary lymphadenopathy without lesions in the breast (Not palpable, No findings on mammography)
  - Evaluation of the Patients with the breast Implants
  - Evaluation of the treated breast for the tumor recurrence (differentiate between scar and recurrence)
  - To evaluate the extent of the tumor in young women with dense breasts.
  - Differentiate between the multicentric and multifocal lesions (Lobular cancer, high grade Ductal carcinoma In situ)
  - Discordant or equivocal findings on Mammography/USG
  - To assess response to the therapy in neoadjuvant systemic therapy
  - Screen high-risk patients

American Cancer Society
Women at High Lifetime Risk

- Know BRCA1 or BRCA2 gene mutation
- First-degree relative with BRCA1 or BRCA2 gene mutation. but have not had genetic testing themselves
- Lifetime risk of breast cancer of 20% - 25% or greater
- Radation therapy to the chest between the ages of 10 and 30
- Li—Fraumeni syndrome or Cowden syndrome or a first - degree relative with one of these syndromes

Multicentric Lesion :- Tumor involves more than 1 quadrant of breast or tumor in same quadrant but distance between them > 4 cm .

- **Multifocal lesions:** >1 tumors develop in the same quadrant, or distance between them less than 4 cm .

Risk Assessment Models

- **Gails model**
  - Number of breast biopsies
  - Age at menarche
  - Age at first live birth
  - Number of first-degree relatives with breast carcinoma.
  - Disadvantage - Not assessing second degree relative or with strong family history.

- **Claus model**
  - Decades of life.
  - First and second-degree relatives and the age at diagnosis.
  - Disadvantage - Not including other risk factors.
- BRCA PRO model to predict risk in the patient with a strong family history.

Pathological Evaluation

- The investigation of Choice for the Evaluation of the patient with a palpable breast lump is a core biopsy or a tru cut biopsy.
- Sensitivity - 85-100%
- ISpecificity - 96-100%.

- **Advantages of core biopsy over FNAC**
  - Distinguish between invasive cancer and non invasive carcinoma In situ
  - Status of molecular markers.
  - Provide grade of tumor.

- **Placement of a clip**
  - While doing core biopsy under image guidance, can place Metallic clip or can place magnetic marker in the Epi-centre of tumor.
  - Silicon or polyvinyl catheter can be placed by giving small incision around the tumor, catheter are palpable and further can excise the area with 1-2 cm in margin

- **Excisional biopsy** 01:02:05
  - Gold standard investigation or gold standard biopsy for the breast lump is excisional biopsy.
  - False negative SLNB ,due to disruptions of lymphatics.
    → Excisional biopsy preferred over core biopsy only when core biopsy is equivocal.

Indications for the surgical biopsy after the core needle biopsy:

- Failure to the sample calcification
- Diagnosis of the atypical ductal hyperplasia
- Diagnosis of the atypical lobular hyperplasia or the lobular carcinoma In situ.
- Lack of concordance between the clinical radiological finding and core biopsy

For non-palpable lesions 01:04:47

- Image-guided stereotactic core biopsy

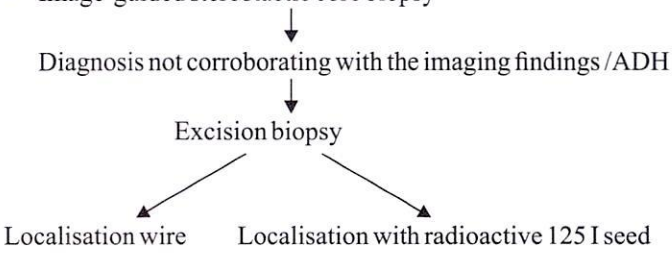
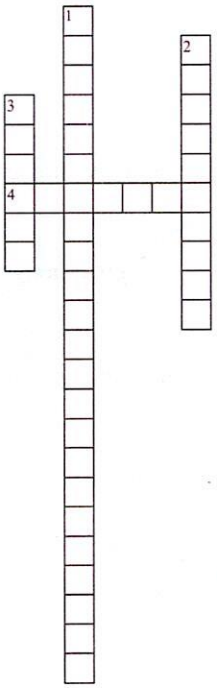


Table 1.1

Breast imaging reporting and Database System (BI-RADS)			
Category	**Assessment**	**Probability of malignancy**	**Follow-up recommendation**
0	Assessment in incomplete	Not applicable	Need for additional imaging evaluation and/or prior mammograms of comparison
1	Negative	Essentially 0%	Routine annaul screening mammography (for women over age 40)
2	Beningn finding(s)	Essentially 0%	Routine annaul screening mammography (for women over age 40)
3	Probably benign finding	>0% but ≤ 2%	Initial short-term follow up (Usually 6 months) examination
4	**Suspicious abnormality** 4a: Finding needing intervention with a low suspicion for malignancy 4b: Intermediate suspicion of malignancy 4c: Findings of moderate concern, with high suspicion of malignancy	>2 to ≤ 10% >10 to ≤ 50% >50% to < 95%	Biopsy should be considered
5	**Highly suggestive of malignancy**	≥ 95%	Requires biopsy or surgical treatment
6	**Know biopsy – proven malignancy**	Not applicable	Category reserved for lesions identified on imaging study with biopsy proof of malignancy prior to definitive therapy

CROSS WORD PUZZLES

Crossword Puzzle



Down

1. Which is the most important view for mammography as it visualizes the maximum tissue.
2. The presence of accessory breasts is called?
3. Which is a modified sweat gland?

Across

4. What is the absence of breasts called?

2 BENIGN BREAST CONDITIONS

- Benign breast conditions are classified by Aberrations of normal development and involution (ANDI).

Physiology of Breast in a Female 00:00:28

- The breast of a female undergoes three sets of physiological changes during lifespan.
  - Physiological changes or changes of development, occur in the early reproductive age group (around 15 to 25 years of age),
  - Cyclical changes
    → Cyclical changes with the menstrual cycles, in late reproductive life and from 25 to 40 years of age,
  - Changes of involution
    → Occur after 40 years of age.
- According to this classification, if there is some aberration during any of these phases, it can lead to pathological changes in the breast, like:
  - Hyperplasia, epithelial hyperplasia, cyst formation, or the formation of papillomas.
- These pathological changes start presenting with certain symptoms and signs.

Classification of ANDI 00:01:50

- According to ANDI, all benign breast conditions are related to normal processes of reproductive life.
- Excessive responsiveness of the breast to a hormone presents with signs and symptoms or with benign breast conditions.
- Benign breast conditions can vary from a spectrum of normal physiological changes in the breast to a disorder (mild) or disease(severe).

Image of Classification 00:03:08

Refer Table 2.1

Important Benign Breast Conditions related to ANDI 00:04:55

- Common manifestation of ANDI is mastalgia (breast pain) and nodularity in the breast.
- Mastalgia can be cyclical or non-cyclical.
- Cyclical mastalgia means the mastalgia associated with menstrual cycles.
- Generally pain in the breast usually starts in the middle of the cycle on day 14 and gradually increases until day 27 or 28, pain regresses or subsides after the onset of menses.
- Cyclic mastalgia is usually bilateral.
  - Occur due to excessive responsiveness of breast tissue to estrogen.

Non-Cyclical Mastalgia 00:06:18

- In non-cyclical mastalgia the breast pain is not related to the menstrual cycle.
- Occur in any phase of the menstrual cycle and anywhere in the breast.
- It can be seen in both premenopausal and postmenopausal females.
- One point that is very painful and very tender, called as a trigger point.

Trigger point

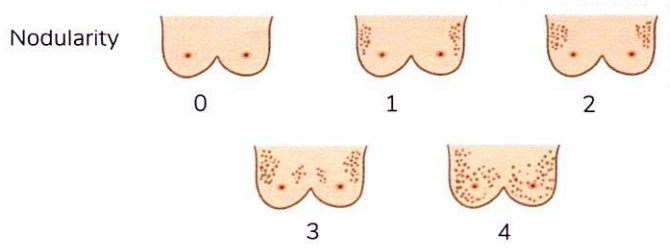
- Trigger point, or the trigger area where the patient has a maximum amount of tenderness.
- Two reasons for non-cyclic nostalgia to occur:
  - Periductal mastitis.
    → Non-cyclic nostalgia because of the chronic inflammation that is periductal mastitis.
  - Tietz syndrome.
    → Tietz syndrome is a condition of costochondritis, inflammation of the costochondral junction
    - Painful costochondral Junction without any radiological abnormality.

    → **Treatment for Tietz syndrome**: The treatment of choice is the local injection of a long-acting steroid, i.e., triamcinolone, + lignocaine at the trigger point.

Nodularity or Lumpiness in the Breast 00:08:16

- Lumpiness means patient feels that there's a lump in the breast, although it may not be a well-defined lump in the breast.
- Occurs because of a change in the texture of the breast.
  - Histological changes can produce a change in the texture of the breast. And this alteration of texture leads to nodularity or lumpiness.
- It is more commonly seen bilaterally in both breasts, and it may be localized or diffusely seen in the breast.
- The maximum amount of nodularity or lumpiness is felt in the upper outer quadrant of the breast.
- Nodularity or lumpiness is felt by the patient maximally one to two weeks before menstruation,and it regresses after the onset of menses.

Lucknow-Cardiff Breast Nodularity Scale 00:09:50



- 5-point ordinal visual analog scale.
- According to this, there can be
  - Grade 0: Normal breast.
  - Grade 1: Minimal nodularity.
  - Grade 2: Mild nodularity,
  - Grade 3: Moderate nodularity
  - Grade 4: Has severe nodularity.

Management of nodularity or lumpiness

- Nodularity without pain
  - Undergo a triple assessment.
  - After a triple assessment, rule out any discrete lesion in the breast.
  - Reassure the patient that it is not malignant.
- Painful, tender nodularity with mastalgia
  - Manage it like mastalgia.
  - Antiestrogenic drugs like tamoxifen and ormeloxifene can be used.

Fibroadenoma 00:11:30

- Fibroadenoma is the most common cause of breast lumps in women aged 15 to 25 years.
- It is a mixed tumor of the breast.
- A mixed tumor - arises from the glandular tissue and stromal tissue of the breast.
- As per the classification, fibroadenoma is a disorder caused by aberrations during the developmental phase of the breast.
- Occurs because of lobular hyperplasia, which occurs because of increased sensitivity of the focal area of the breast to estrogen.
- Encapsulated tumors surrounded by a capsule, and 2 to 3 centimeters in size.
- Fibroadenomas >5 centimeters in size, called as giant fibroadenoma.

There can be two types of fibroadenoma

- **Pericanalicular type of fibroadenoma**
  - Stromal proliferation occurs around the ducts, gives a whorled appearance.
- **Intracanalicular type of fibroadenoma**
  - Stromal proliferation compresses or distorts the ducts to create cleft-like spaces,
- The pericanalicular type is a hard type of fibroadenoma.
- **Features of fibroadenoma patients**
  - A young female present with a painless lump in her breast.
    → On examination of lump,
    → Features-well-defined, smooth surface, regular borders, firm in consistency, extremely mobile lump, called as breast mouse.

Diagnosis 00:15:05

- Confirmed by ultrasound if the patient has typical features of fibroadenoma.
- **Biopsy**
  - >25 years of age or any atypical features for fibroids on ultrasound.
- **Relative risk for malignancy or fibroadenoma**
  - For a simple fibroadenoma, the relative risk is 1.2 to 1.5.
  - For complex fibroadenoma with a family history of breast cancer, the relative risk is 3 to 4.
  - The risk in fibroadenoma is higher for lobular carcinoma.
  - 10% of fibroadenomas can be multiple.

Treatment 00:16:31

- Simple observation is the first-line treatment every patient does not require treatment.
- Fibroadenoma is a hormone-responsive tumor, and some of the fibroadenomas can show regression with tamoxifen and ormeloxifene.
- The hormone-responsive nature can be described by
  - Increase in size during pregnancy and regress in size or decrease in size after childbirth.
  - Can undergo regression after menopause.

Indications of Surgery or Excision 00:17:39

Excision or surgery should be done in fibroadenoma under the following conditions:

- > 30 years of age, or
- Female with family history of breast cancer, avoid observation should undergo surgery or excision.
- Indications - cosmesis if the patient wants it removed because of cosmetic concern or patient preferences.
  - If the doctor has explained to her that it has a very low risk of malignancy, but still she does not want to take any chance, due to the patient's preference, the doctor can go and excise it.
- Other indications - suspicious findings on imaging, like the presence of lobulation. Atypical histology finding.
- Non -surgical treatment.
  - Cryo ablation
  - Can be removed piecemeal by vacuum-assisted biopsy techniques.
  - Treating fibroadenomas with a non-surgical method does not leave any scars for the patient.

Breast Cyst 00:19:44

Involution

- Breast cysts is a disorder that occurs because of aberrations during the involuntary phase that result in breast cysts.
- Pathological Mechanism - breast cysts occur because of an aberration during lobular involution. Hence, slow lobular involution, result in a breast cyst.

Loss of stroma

- Pathological mechanism - loss of stroma that leads to kinking of the ductules. Because of the kinking of the ductules, there is obstruction of the ductules lead to accumulation of secretions, and further formation of the microcysts occur.
- Different microcysts conglomerate together and lead to macrocyst in the breast.
- Other factors associated with breast cysts are:-
  - Hyperestrogenemia and hormone replacement therapy.
- Breast cysts seen in females in the age group of 35 to 50 years.
  - Breast cyst can be seen in 50 year old female on hormonal replacement therapy.
  - Breast cysts present as a painless mass or lump in the breast, and they are usually multiple and bilateral.

Investigation of Breast Cyst Patient 00:21:51

The investigation of choice - simple ultrasound of the breast.

Ultrasound findings:-

- Simple breast cyst - Well-circumscribed with smooth margins and an echo-free center.
- Complex breast cyst - Solid component
  - An ultrasound-guided biopsy should be taken from complex cyst to rule out a cystic adenocarcinoma.
    → For complex cyst biopsy is mandatory.
- In symptomatic or complex cyst - ultrasound - guided aspiration is done .
- On ultrasound-guided aspiration,
  - Aspirated fluid - Non-hemorrhagic, serous.
    → After aspiration cyst or lump completely subsides no further management is required.
    → Patient kept on follow-up.
  - Aspirated fluid - Hemorrhagic.
    → Fluid sent for cytological examination.
  - After aspiration, if lump doesn't completely subsides.
    → Biopsy is sent from Residual lump.

Duct Ectasia 00:24:15

- Duct ectasia - dilatation of a major lactiferous duct.
  - Disorder of involution.
- More commonly seen in females in the age group of 40 to 45 years.

Pathophysiology

- Dilated ducts filled with debris irritate ductal epithelium lead to inflammation, known as periductal mastitis.
  - Periductal mastitis can lead to a sub-areolar or periareolar Abscess.
- Fibrosis lead to nipple retraction in periductal mastits.
- Ductal Ectasia lead to :-
  - Periductal mastitis, nipple retraction, periareolar, or subareolar abscesses.

Clinical features

- Most common clinical presentation - Nipple discharge.
  - Muddy nipple discharge from multiple ducts.
  - Greenish -brown discharge from multiple ducts.
- Pathological features :-
  - Nipple interaction and peri-areolar abscesses.
  - Duct ectasia clinical presentation may mimic a carcinoma or benign condition of mastitis.
- Triple Assessment is done to rule out carcinoma in suspected case of duct ectasia.
- On ultrasound dilated major lactiferous ducts are seen.
- Size - > 3 millimeters.

Treatment

- If there is any infection or inflammation the initial treatment is to start the patient on antibiotics.
- Mixed infection by aerobic and anaerobic organisms.
- Broad-spectrum antibiotic like amoxiclav, flucloxacillin, or Cephalosporin, + metronidazole for at least two to three weeks.
- Hadfield's operation
  - Excision of all the major lactiferous duct.
  - Indications:-
    → Symptoms persist
    → Profuse discharge
    → Subareolar abscess

Papilloma 00:28:55

- A papilloma is a localized hyperplasia of the duct epithelium.
- Type - solitary papilloma and multiple papillomas.

Solitary Papilloma

- True polyp arising from the epithelium of the major lactiferous duct.
  - Associated with the presence of a fibrovascular core, with papillary projections in the epithelial cells and the myoepithelial cells.
- Location - within 5 centimeters from the nipple.
- Relative risk of Solitary papilloma - 1.5 -2 for malignancy.
  - Commonly associated with ductal carcinoma in situ.
  - Fibroadenomas commonly associated with lobular cancer.

Clinical Features

- Most common - bloody nipple discharge from a single duct.
- Most common cause of bloody nipple discharge - Duct papilloma.

Investigations

Ultrasound

- Show dilated duct with a growth or a lesion inside.

Nipple Discharge

- Nipple discharge cytology - not very reliable in excluding malignancy.
- Give false negative results.
  - Nipple discharge cytology is not a preferred investigation.

Ductoscopy

- Ductoscopy done with microendoscope, but it depends on the availability of microendoscopes for ductoscopy.

Ductography

- In duct papilloma - Smooth, rounded filling defect is surrounded by contrast.
- In malignancy - Irregular filling defect, which can be seen in a ductography.

Treatment

- The treatment of choice - microdochectomy, single duct with the papilloma is excised.
- Papillomatosis - multiple papillomas.
  - More than five papillomas in multiple ducts and located peripherally.
- Papillomatosis is not associated with a fibrovascular core.
  - The solitary papilloma is associated with the fibrovascular core.

Juvenile Papillomatosis 00:33:31

- Multiple papillomas seen more commonly in young females.
- Clinical features:-
  - Multinodular mass with multiple firm papillomatous nodules with clustering of cystic spaces. It is called as Swiss cheese disease.
  - Microscopically, it contains multiple papillomas,with or without atypia.
    → There can be changes in sclerosing adenosis, ductal hyperplasia, and the presence of an apocrine cyst.
- With family history of breast cancer in juvenille papillomatosis Increase the risk of malignant transformation.

Nipple Discharge 00:35:50

- Nipple discharge may be due to benign or malignant conditions.
- It should be suspected of malignancy. If the nipple discharge is
  - sanguineous, (bloody)
  - serous
  - from a single duct, from a solitary duct
    → Spontaneous.
- Malignancy should be suspected for a nipple discharge.
  - If it occurs in a female over 40 years of age and is associated with the lump in the breast, have a high suspicion of malignancy.
  - Serous and sanguineous discharges can be seen when there is excessive proliferation of duct epithelium; they may be local or diffuse, and they can be seen in ductal carcinoma.
  - Ductal hyperplasia can also produce serous discharge.
- Nipple discharge with suspected malignancy triple assessment is done to rule out cancer.
- The discharge is suspected to be benign cause if it is
  - Bilateral,
  - from multiple ducts
  - in females less than 40 years of age.
  - Milky discharge, a bluish-greenish-brownish discharge, or a muddy-discharge
- Nipple discharge can be seen in pregnancy, due to increased blood flow to the ductal lobular tissue, and that can lead to a serous or bloody nipple discharge.
- But this nipple charge is serous or bloody nipple discharge in pregnancy should be considered physiological, and it regresses after childbirth.
- Ultrasound should be done to rule out any signs of malignancy.

Types of Nipple Discharge 00:38:50

- **Serous Discharge**
  - Nipple discharge from a single duct
  - It can be due to ductal carcinoma, ductal hyperplasia, or sometimes due to ductal papilloma.
- **Bloody Nipple Discharge**
  - The Bloody nipple discharge from a single duct can be due to a ductal carcinoma or ductal papilloma.

Greenish/brownish or grumous/muddy nipple discharge

- Duct ectasia is the most common cause of the greenish-brownish, grumous or muddy nipple discharge from multiple ducts.

Milky nipple discharge

The most common cause of Milky nipple discharge is lactation.

- Milky nipple discharge can also occur due to galactorrhea.
  - Galactorrhea is a condition when milky nipple discharges from multiple ducts bilaterally and is unrelated to lactation and childbirth.
- Galactorrhea is commonly associated with increased levels of prolactin.
- Drugs causing galactorrhea include:-
  - Haloperidol
  - Chlorpromazine
  - Amitriptyline

- Metoclopramide
- Cimetidine.

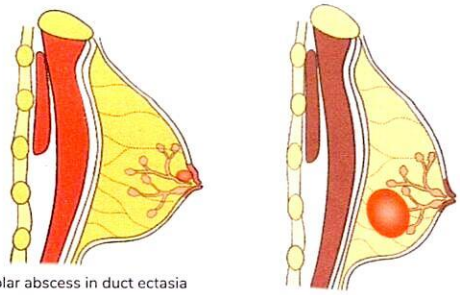
- Hypothyroidism is a rare cause of milky nipple discharge.
- Causes of nipple discharge from the nipple surface :-
  - Paget's disease of the nipple, and eczema of the nipple.
- Nipple discharge can be managed by triple assessment to rule out malignancy.
- The further course of action will depend upon whether the discharge is bloody or non-bloody and the age of the patient.
- In case the discharge is non-bloody and the triple assessment is normal.
  - Reassure the patient.
- In case the discharge is profuse and is bothering the patient,
  - Excise 1.52 centimeter length of a major duct or multiple ducts, depending on whether the single duct is involved or the multiple ducts involved.
- In cases the discharge is bloody, the patient is less than 40 years of age, and a triple assessment is normal,
  - Keep the patient under follow-up and surveillance.
- In case the discharge is bloody and the patient is more than 40 years of age. Triple assessment is normal.
  - But if the patient was 40 with bloody discharge then excise the duct at least 5 centimeters of the duct length from the nipple; excising a duct is called a microdochectomy.

Classification of Benign Breast Disorders 00:42:43

- Classification that helps to assign the risk of malignancy with these different types of benign breast conditions.
- Non- proliferative disorder of breast:-
  - Cysts and apocrine metaplasia
  - Duct ectasia
  - Mild ductal epithelial hyperplasia
  - Calcifications in the breast
  - Fibroadenoma and related lesions
- Proliferative breast disorders without atypia :-
  - Sclerosing adenosis
  - Radial and complex sclerosing lesions
  - Ductal epithelial hyperplasia: can be moderate or florid
  - Intraductal papillomas
- Atypical proliferative lesions :-
  - Atypical lobular hyperplasia
  - Atypical ductal hyperplasia

Infections and Inflammation in the Breast 00:44:19

Mastitis and Breast Abscess



Subareolar abscess in duct ectasia

- Mastitis and breast abscesses, can be lactational or non-lactational.
- 90% of breast abscesses are lactational.
- Non-lactational mastitis or breast abscesses, are commonly associated with duct ectasia.
- When breast abscesses occur associated with duct ectasia and non-lactational breast abscesses, they are more commonly subareolar breast abscesses.

Lactational Abscesses 00:45:05

- The most common organism responsible for infection is Staphylococcus aureus.
- Predisposing factors for breast abscesses during lactation includes
  - **Cracked or fissured nipple**
    - → Bacteria can easily enter the nipple, and the source of bacteria is the oropharynx of the child.
    - → Oropharynx of the child is rubbed, there can be lodging of bacteria which can enter through the cracked nipple and the fissure nipple and lead to a breast abscess.
- **Stasis**
  - Another predisposing factor for breast abscesses during lactation is stasis.
  - This stasis occurs in milk.
  - It may be caused by nipple retraction, because of which the milk is not adequately drained
  - When the duct gets blocked with epithelial debris.
    - → Blockage of the duct with epithelial debris or nipple retraction can lead to stasis of milk, in which bacteria can multiply and cause infection.
  - Staphylococcus aureus when it enters the ampulla, it causes clotting of the milk, and it multiplies in the clotted milk.
- **Time period of lactation when these abscess are more common.**
  - These abscesses can be more common during two periods of lactation.
    - → In the first month of lactation.
    - → The second common time period - at the time of weaning.
      - – The abscess can be caused by injury from the child's teeth,
        a. Improper breast feeding can lead to stasis.

Clinical Features 00:46:53

- Presented with symptoms and signs of inflammation.
  - Swelling, redness, tenderness, and pain, along with a localized temperature.
- Systemic features like fever.
- In breast abscess, fluctuation is a late sign
  - Incision and drainage of breast abscess doesn't depend upon fluctuation.
- Fluctuation as late sign seen in:-
  - Breast Abscess
  - Parotid abscesses.
  - Ischiorectal abscesses.
  - Palmer and plantar abscesses.
- Fluctuation is a late sign, so unable to clinically differentiate between mastitis and breast abscess.
- Ultrasound is the investigation of choice for confirmation of diagnosis of breast Abscess
  - Differentiate between Mastitis and breast abscess.

Treatment 00:48:22

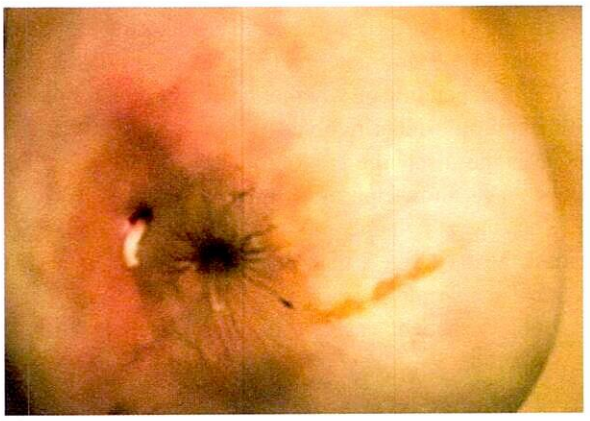
- Preferred treatment - ultrasound-guided aspiration.
  - While performing aspiration once every alternate day, the ultrasound should be done, and if there is any pus, that should be aspirated.
- Abscess > 3 centimeters in size or more than 30 cc in volume, ultrasound-guided catheter drainage can be performed.
- Patients should be encouraged to continue breastfeeding.
  - It is the advantage of doing aspiration or catheter drainage because the patient will have minimal pain.

The role of incision and drainage in a patient of breast abscess

- Indications of Incision and drainage:-
  - Not undergoing resolution of symptoms or the abscess is not resolving despite multiple aspirations.
  - If the patient is deteriorating.
  - Lack of response to aspirations is more commonly seen when the abscess is multiloculated or more than 3 centimeters in size.
- Complication of Incision and Drainage :-
  - Formation of Milk fistula.

Non-Lactational Breast Abscess 00:51:09

- Non-lactational breast abscesses are more commonly associated with duct ectasia, which results in peri areolar or subareolar breast abscesses.
- Non-lactational breast abscesses are more commonly seen in perimenopausal females.
- Presentation - chronic recurring peri areolar breast abscess and associated fistula that is commonly called Zuska's disease.
- Multiple recurrences occur at the same location.
- The fistula is seen most commonly at the edge of the areola
  - At the edge of the areola the skin is very thin, and at this point pus can trickle down and lead to a fistula.
- Cigarette smoking is an important risk factor for chronic subareolar and periareolar abscesses.
- Cigarette smoking is associated with an increased risk of recurrence and anaerobic infections.
  - Mixed infections can occur due to both aerobic and anaerobic organisms, and cigarette smoking predisposes to increasing the risk of anaerobic infections.



Fistula at the edge of areola.

Treatment 00:53:00

- Treatment of acute infection with the abscess.
  - With antibiotics adminstrations.
- Aspiration of the abscess or drainage of the abscess can be performed.
- Definitive treatment - In chronic, recurring condition should be done four to six weeks after the acute infection has settled down.
- The definitive treatment - complete excision of the fistula, with the excision of the disease duct or ducts with surrounding inflamed tissue.
  - If there is a single duct involved, then ductectomy or excision of the single duct can be done.
  - Recurrence after removing a single duct or multiple ducts are involved, then multiple duct excision is needed.

Breast Tuberculosis or Tuberculosis Mastitis 00:54:37

- An Infectious condition that can be seen in the breast is tuberculosis of the breast or tuberculosis mastitis.
- It is uncommon as compared to acute lactational mastitis.
- **Sources of infection**
  - From axillary or internal mammary lymph nodes.
  - Secondary to osteitis of the ribs or the sternum.
  - Infection of the pleura.