

Summary: Breast diseases

Part1 | Introductory part:

- Breast is a modified sweat gland.
- Lymphatic supply is an extremely important subject in breast surgery.
 - **Superficial lymph nodes:** drain the skin. (infection of the nipple. Skin, areola.)
 - **Deep lymph nodes:**
 - ⇒ Axillary lymph nodes:
 - **Level 1:** Anything below pectoralis minor (90% of axillary lymph nodes).
 - **Level 2:** Behind pectoralis minor.
 - **Level 3:** Above pectoralis minor
 - ⇒ Internal mammary (between the ribs).
 - ⇒ Supraclavicular.
- ✓ 90% to axilla, 10% to the other areas.
- Normal variation of the breast:**
 - ⇒ **Accessory nipple:** along the milk line, extends from the axilla down to the groin.
 - ⇒ **Accessory breast tissue:**
 - Occur during: puberty, pregnancy or lactation.
 - Once the breast tissue develops, most of it condensate in the upper outer part (the usual site of malignancy (why usual? most of the glandular tissues lie in the upper outer part) → During puberty it gets stimulated by hormones → it presents as a skin fold.
 - In middle age patients: make sure it's not a pathology by ultrasound & then assure the patient.
 - In lactating or pregnant woman: it disappears by itself.
 - It's not a fully developed breast tissue.
 - It doesn't cause any pathology, assure the patient & If the patient is unable to adduct her arm → remove it surgically.
 - ⇒ **Asymmetry of the breast:**
 - **NEVER** interfere surgically during puberty.
 - In old patients, take it serious & rule out breast masses.
- Abnormal clinical features:
 - **Infection:** clear redness in the breast.
 - **Cancer:**
 - Nipple retraction → (if invading the nipples)
 - Peau de' orange appearance → (if invading the suspensory ligaments)

Part 2: Benign disease:

<p>Breast cyst:</p>	<ul style="list-style-type: none"> A common developmental change. <ul style="list-style-type: none"> ○ It's an <u>inflammatory change secondary to hormonal response, rather than a disease.</u> Some of them are complicated (where a solid component is found in the clear fluid of the cyst. & that solid component should be BIOPSIED). BEST MODALITY TO DETECT CYST IS US. <ul style="list-style-type: none"> ○ If less than 3 cm → Observe. ○ If more than 3 cm → aspirate it and leave the patient for 3 months, if the fluid collects again → aspirate it → (3 aspirations in total) → if collects again (after 3 aspirations) → remove it surgically. ○ If bloody → go for surgical biopsy. Indication of cyst removal: Painful cyst – bloody cyst – recurrent cyst.
<p>Fibro-adenoma</p>	<ul style="list-style-type: none"> Verrrrrry common across the globe. COMMONEST SOLID MASS IN YOUNG PATIENTS. Totally benign. 15 – 35 female. Size: ranges from few mm to 10 cm. How they're discovered? if big and palpable, or incidentally. Patient presented with fibroadeoma. What to do? Ultrasound. When to remove it? <ul style="list-style-type: none"> ○ Size: <ul style="list-style-type: none"> ▪ If > 4cm (Giant that is affecting the symmetry of the breast). ○ Family history of fibroadenoma (NOT because it is pre-malignant (بس علشان يرتاح بال البيشنت)). ○ Location: in a place affecting her daily activities, or her bra (inframammary fold). ○ Age: more than 40 ○ Weird pathology: fibroadenoma with hyper-cellularity with evidence with atypia. ○ If getting bigger and bigger and bigger ○ If the FNA cytology report → NOT fibroadenoma or wasn't certain. ○ Phyllodes (A variation of fibroadenoma where there is a potential risk of malignancy (less than 1%)).

	<ul style="list-style-type: none"> • Chance of being malignant: very rare.
Phyllodes:	<ul style="list-style-type: none"> • Verrrrrrry aggressive tumor, it is localized. • Variation of Fibroadenoma. • 1% turn to sarcoma. • Treatment: Mastectomy with reconstruction (“ONE STRIGHT FORWARD ANSWER”).
Intraductal papilloma:	<ul style="list-style-type: none"> • Commonest cause with bloody nipple discharge, from single duct, spontaneous. • How to diagnose it? <ul style="list-style-type: none"> ○ Ultrasound (less than 40) or Mammogram (above 40). ○ DUCTOGRAM (shows you the anatomy of the duct, cannulate the duct then inject a contrast material → if a filling defect is seen → take a biopsy (FNA or core biopsy)). <ul style="list-style-type: none"> ▪ Single filling defect: Intraductal papilloma → benign → assure the patient (it disappears by itself, if didn't disappear → remove it surgically). ▪ Multiple filling defect: intraductal papillomatosis → Pre-malignant condition (take it out surgically).
Duct ectasia:	<ul style="list-style-type: none"> • Dilatation of the ducts → Secretions → Stasis → infection → inflammation → changes in the nipple \ areola → abscess. • White, green, greenish-brown or serosanguinous discharge that is coming from multiple ducts. • Organism: Mixed growth. (& treated with broad spectrum antibiotics). • At higher risk of getting infection & breast abscess. (Peri-areolar abscess) <ul style="list-style-type: none"> ○ BREAST ABSCESS IN NON-LACTATING WOMAN = DUCT ECTASIA. • How to diagnose it? ULTRASOUND.
Mastitis:	<ul style="list-style-type: none"> • LACTATING WOMEN. • Whole breast is swollen, TENDERNESS & PAIN – FEVER & RIGORS – REDNESS. • Organism: Staph aureus (Source: baby's mouth) • How to diagnose it? Clinically (if she's lactatin). • How to treat it? <ul style="list-style-type: none"> ○ IV antibiotics ○ Continue breast feeding EXCEPT if the baby got abdominal cramps or diarrhea then she should: <ul style="list-style-type: none"> ▪ Stop breast feeding ▪ Use breast pump (to avoid breast engorgement). • Inflammatory carcinoma = Old patient + Non-lactating + No Fever + Not that painful \ tender
Breast abscess:	Incision & drainage.
Fat necrosis:	<ul style="list-style-type: none"> • Trauma (RTA) or surgery → Necrosis of fat tissue. • How to differentiate it from malignancy? Biopsy. كثير من الاحيان المريضة ما تتذكر من خربة الحادثه فما نقدر نعلم على الهستوري • Assure the patient after biopsy.
Nipple discharge	<ul style="list-style-type: none"> • Mostly begin (90-95%) but but but but you should know the following: <ul style="list-style-type: none"> ○ Does it come spontaneously or with squeezing?!!!!!! <ul style="list-style-type: none"> ▪ Spontaneous discharge is VERY IMPORTANT & SIGNIFICANT ○ Does it come from a single duct or multiple ducts? ○ Color: MOST IMPORTANT COLOR IS RED \ BLOODY! • Investigations: history – clinical examination – mammogram & ultrasound – DUCTOGRAM. • Commonest discharge in the breast → Milk (you have to rule out central causes “Prolactinomas”) • Causes: <ul style="list-style-type: none"> ○ Duct ectasia: abnormal dilatation of the duct where secretions are collected and their color changes, until they get ejected outside. ○ Papilloma. ○ Lactation. • What to do? if the cause was benign → reassure the patient, but if the patient is bothered → excise the duct (if came from a single duct), or total ductectomy (if multiple)

Part 3: Benign disease:

Facts:

- ⇒ Cancer #1 in female, killer #1 in female, cancer #1 in the whole world.
- ⇒ Compared to other societies, Saudi women get breast cancer 10 years earlier.
- ⇒ Half of our patients come at stage 3 or 4.

Risk factor: the most documented risk factors are 2: being a female & age > 45 (in west > 57)

Staging:

- **Stage 1** (breast mass ONLY, less than 2 cm– conservative therapy with radiation) - **stage 2** (Breast mass with SINGLE MOVABLE lymph node). - **Stage 3** (Locally advanced, if skin \ muscle are involved, more than 5 cm, inflammatory breast cancer) - **stage 4** (Distant metastasis)
- 1 & 2 = Early breast cancer – 3 & 4 = Late breast cancer

Goal of the basic mammogram screening:

- **To catch the patient at the DCIS phase (80% of DCIs are curable).**
 - ✓ (Mammogram → micro-calcifications → biopsy → okay it's a DCIS that's good → treatment (either by local excision or mastectomy deepening on the size of the mass).

Histological: Ductal are the commonest then → Lobular

Breast self-examination: Once a month (preferably after the period).

Treatment: is guided by the biological features of the tumors (How do you get them? Core biopsy):

- * **ER & PR status:** tells you whether the patient is good for **hormonal therapy** or not (if positive → give hormonal therapy)
- * **HER2:** cytoplasmic protein that is overexpressed in about 20% of breast cancer patients, if +ve → good for **biological therapy**. (Biological therapy is given for one and a half year and it's good in preventing brain metastases)
- * **KI67:** How quick and how slow this cancer is multiplying (if below 14 → slow cancer → **chemotherapy** won't be effective) (if above 14 → Fast growing tumor → chemotherapy will be effective)
- ✓ Hormonal + chemotherapy + biological therapy = systemic therapy.
- ✓ Surgery + Radiotherapy = Locoregional

Surgery:	<ul style="list-style-type: none"> • Breast: 2 options: Mastectomy (whole breast removal) or breast conserving surgery (Lumpectomy) (removing the cancer) • Axilla: 2 options: axillary lymph node dissection (Removal of all axillary lymph nodes) or sentinel lymph node biopsy (if +ve → you clear all the lymph nodes). ✓ Lymphoedema is a side effect of axillary lymph node dissection.
Radiotherapy:	<ul style="list-style-type: none"> • In cases of lumpectomy → to reduce chances of recurrence. (NEVER do conservative surgery WITHOUT radiation) • Not given: during pregnancy, patient with previous upper radiotherapy, multi-focal tumor. → Mastectomy is the only choice 😊 <ul style="list-style-type: none"> ○ Late pregnancy with stage I → induce labor & then lumpectomy with radiotherapy. ○ Early pregnancy with stage I → Mastectomy.
Chemotherapy:	<ul style="list-style-type: none"> • Most important side effects: Neutropenia (she may catch an infection) & hair fall. • Look at KI67 (>14 → give chemotherapy).
Hormonal therapy:	<ul style="list-style-type: none"> • They bind to the estrogen \ progesterone receptors and block their proliferative actions on mammary epithelium. • Giving as tablets for 10 years. • In ER & PR positive patients • Prevents progression & metastasis of the disease. • Two main side effects: DVT and endometrial cancer. ولكن المنافع أقوى من المضار
Biological therapy:	<ul style="list-style-type: none"> • Giving for one and a half year, every three weeks. • In HER2 positive patients. • Prevents brain metastasis. • Cardiotoxic (so monitor patient's cardiac state)
Ovarian ablation:	
Reconstruction:	<ul style="list-style-type: none"> • In cases of Mastectomy → mention it to the patient • 3 ways: <ul style="list-style-type: none"> ○ Transverse Abdominis with its skin, subcutaneous tissue, nerve supply, blood supply/ ○ Latissimus dorsi. ○ Tissue expander under pectoralis major → inflate it weekly until it gets compatible with the other side → remove it → put silicon.

Part 4: Approach:

When a patient with a breast lump comes to your clinic, you do this triple assessment:

1- History and clinical examination.

- **History:**
 - Just imagine the life of a female from a childhood until adolescent (menarche, marriage, pregnancy, menopause).
 - **Infections.**
 - **Menstrual cycle** (is it regular? Is her problem associated with it?)

- **HRT** (if yes -> for how long? If more than 2 years then she's at a high risk and you should advise her to stop for 6 months, then recontinue), OCP.
- **Family history of breast cancer:**
 - The closer the relative the higher the risk.
 - The younger the relative → the serious the case. (cancer at 40 is more dangerous than cancer at 80).
- **Breastfeeding** (Keep in mind: if > 6 months → protective, If less → not "protective")
- **Examination:**
 - You expose both breasts, both arms, both axilla, and supraclavicular area.
 - **Why we're concerned about hand?** To rule out lymphedema,
 - **Why we're concerned about axilla?** To check lymph nodes.
 - You examine each breast separately. You see if there's nipple changes, skin changes, hotness, masses, multiplicity, bilaterally, relation of the skin to this mass, relation to the muscles of the mass? Is it fixed or mobile? Is it tender or non-tender?
 - Examine the back for tenderness & abdomen for ascites.

2- Imaging: first line investigations are: Mammogram & ultrasound. When? If patient came with a lump, or she's old (for screening), or if patient with generalized lymphadenopathy (axillary mass) (palpable axillary mass + no palpable Breast mass → Mammogram).

- **Mammogram:** If the patient is above 40
 - Types:** Diagnostic – screening.
 - BEST MODALITY FOR MICROCALCIFICATIONS.** Whole idea of early screening is to detect micro-calcifications.
 - The younger the patient, the less beneficial the mammogram.
 - Cardinal mammogram features:**
 - **Speculated mass.** (mass with irregular margins).
 - **Architectural distortion without mass.**
 - **Micro-calcification with casting or irregularity.**
 - (if the macrocalcifications are taking the distribution of a duct or of segment, or associated with a mass → then this important suspicious → Biopsy.).
 - For any micro-calcification, a **biopsy** must be done
 - ✓ (why? About 15% will turn to be pre-malignant "ductal carcinoma in situ") or turn to be malignant), and when the pathology report comes to you, make sure that it says "calcifications seen" so you know that you didn't biopsy the wrong area.
 - **MACRO** ones are usually benign.
 - 2 views:** **CC** (craniocaudal) & **MLO** (Medio-lateral-oblique), the edge of pectorals major is seen in this view. Both of them are used to locate the lesion.
 - BI-RAD SYSTEM.**
- **Ultrasound:** if below 40
 - Radiation free.
 - BEST MODALITY TO DETECT A cyst**, or to follow a tumor.
 - Dynamic and operator dependent.
 - It is **EXCELLENT** in giving the status of axillary lymph nodes (**IT IS THE BEST**) and it is not used for micro-calcifications (**MAMMOGRAM IS THE BEST**).
 - Margin, surroundings, size, content of a mass.
 - IT IS NOT GOOD FOR SCREENING! MAMMOGRAM IS USED FOR SCREENING !!**
 - Benign masses:** Edges are smooth. doesn't interrupt breast lines, "wider than tall"
 - Malignant masses:** irregular or indistinct, heterogenous, cut across surrounding tissue planes, "taller than wide".
- Then we go higher to **MRI** and **nuclear medicine (PFT)**. (MRI in young patient with strong family history)

3- Cytology and tissue diagnosis.

- **Fine needle biopsy:**
 - You are aspirating **CELLS** NOT tissue so the result is مختصرة جدا
 - ✓ Benign cells seen – Malignant cells seen – Material inadequate.
- **Core (tissue) biopsy:**
 - The needle here is thicker, and it gives you **TISSUE**.
 - More painful than FNA.
- **Sterotactic biopsy:** biopsy under mammogram.

- ✓ **Ductal carcinoma in situ (DCIS):** Survival & incidence has increased because of screening (where they're discover at an early stage: pre-malignant or early malignant). 90% of microcalcifications are DCIS.
- ✓ Pain is common.
- ✓ Never assure a patient with breast mas without taking biopsy.

*OCP = Oral contraceptive. *HRT= Hormonal replacement therapy. *ER= Estrogen receptors. *PR= Progesterone receptors.

Good luck!

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