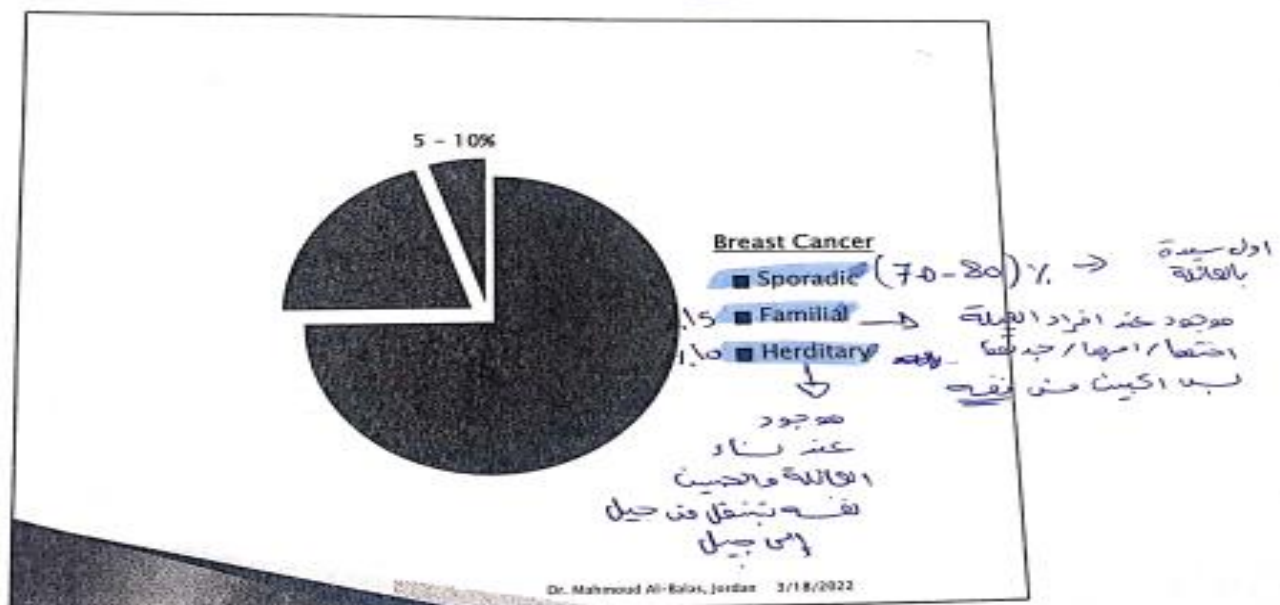
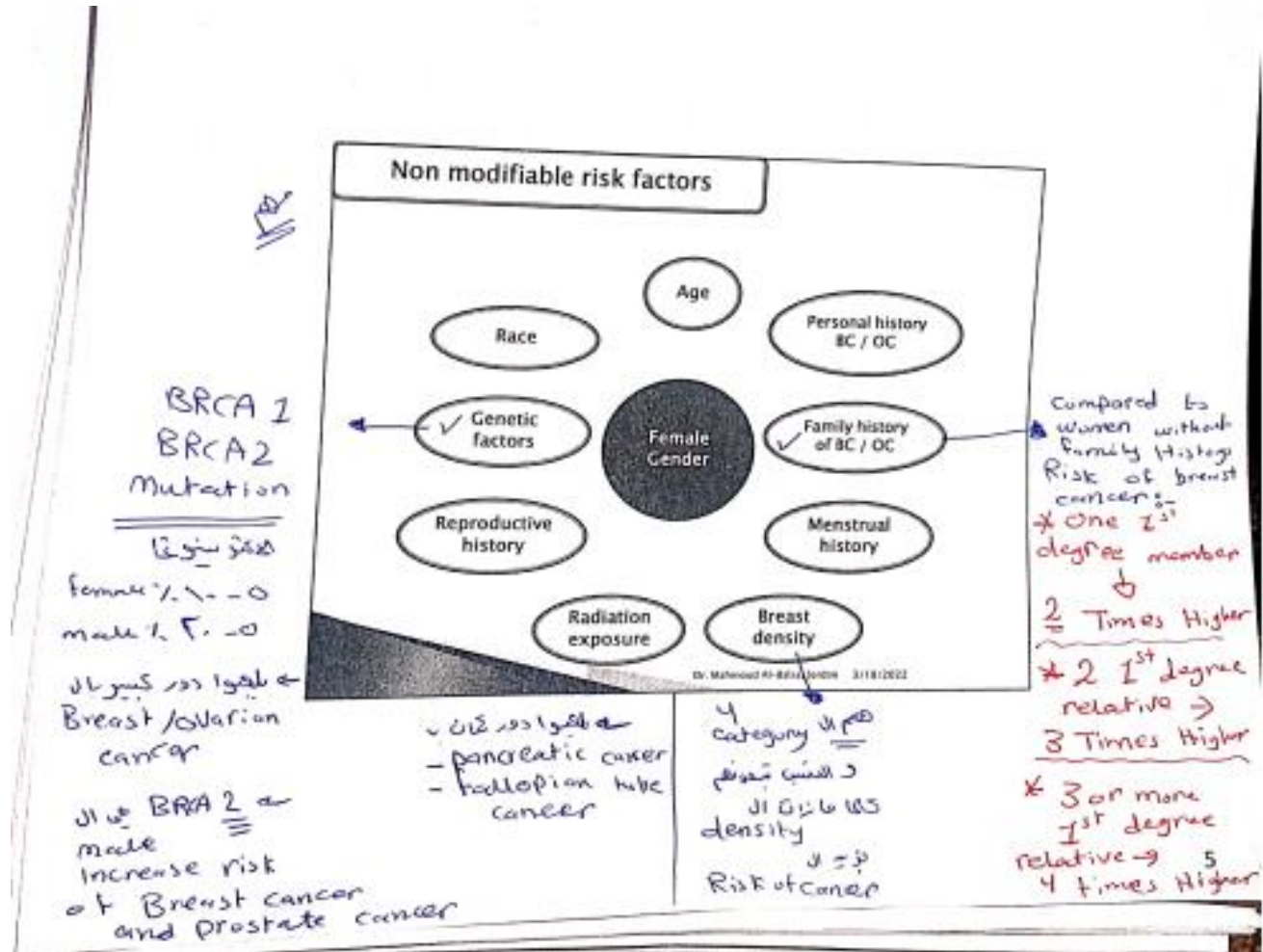


## Risk Factors for Breast Cancer:

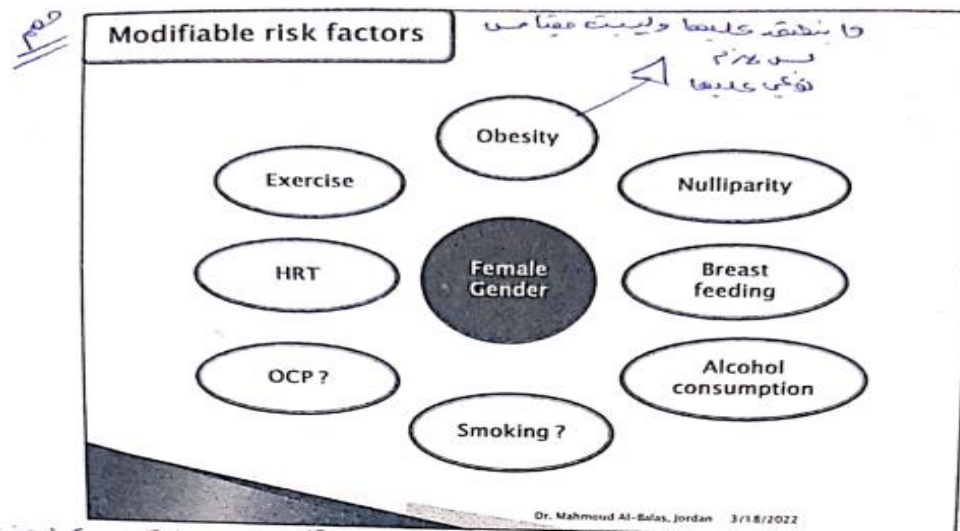


→ That's why lady with early Menar or delay Menopause or not Married or no previous pregnancy / full Term Baby

Important to know which category is High Risk and which is low Risk

Factors that Increase the Relative Risk (RR) for Breast Cancer in Women	
RR > 4.0	<ul style="list-style-type: none"> <li>Female</li> <li>Age (65+)</li> <li>Inherited genetic mutations associated with breast cancer such as BRCA1/BRCA2</li> <li>Two or more first-degree relatives with breast cancer diagnosed at an early age</li> <li>Personal history of breast cancer</li> <li>Biopsy-confirmed atypical hyperplasia</li> <li>DCIS, LCIS</li> </ul>
2.1 < RR < 4.0	<ul style="list-style-type: none"> <li>One first-degree relative with breast cancer</li> <li>High-dose radiation to chest</li> <li>High bone density (post-menopausal)</li> <li>Breast density &gt; 50%</li> </ul>
1.1 < RR < 2.0	<p>Factors affecting circulating hormones:</p> <ul style="list-style-type: none"> <li>Late age at first full-term pregnancy (&gt;30 yrs)</li> <li>Early menarche (&lt;12 yrs)</li> <li>Late menopause</li> <li>No full-term pregnancies</li> <li>No breastfeeding</li> <li>Recent oral contraceptive use</li> <li>Recent and long-term hormone replacement therapy</li> <li>Obesity</li> <li>Breast density 26-50%</li> </ul> <p>Other factors:</p> <ul style="list-style-type: none"> <li>Personal history of endometrium, ovary or colon cancer</li> <li>Alcohol consumption</li> <li>Height (tall)</li> <li>High socioeconomic status</li> <li>Jewish heritage</li> </ul>

All are Hi Risk of develop Breast carcinoma



Estragen supplement  $\rightarrow$  Risk of Breast cancer  $\rightarrow$  That's why lady with early Menar or delay Menopause or not Married or no previous pregnancy / full Term Baby

**proliferative ductal lesions**

A correlation between ductal proliferative lesions and risk of breast cancer

UDH	→	1.5-2 fold
ADH	→	4-5 folds
DCIS	→	9-10 folds

Severity of Histopathology ↑ Risk of develop carcinoma in future

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**Lobular Neoplasia**

## Mastitis

**ACUTE MASTITIS**

Also called ○ Puerperal or lactation mastitis

تعريف ماستيتا

○ Defined as cellulitis of the interlobular connective tissue within the mammary gland, which can result in abscess formation and septicemia.

يحدث عند الحوامل و  
Shortly After delivery

○ Usually occurs during the first 3 months postpartum as a result of breast feeding

تحدث في فترة ما بعد الولادة  
في الشهرين الأولين

- Occur in 2% to 24% of breastfeeding women from several weeks to up to 1 year after delivery in women who continue to breastfeed
- 10% develop a breast abscess

→ Majority of cases occur in first 3 months

Dr. Mahmoud Al-Balas, MBBS, MSc 3/18/2022



### Risk factors

#### ① Improper nursing technique

- Milk stasis and cracks or fissures of the nipple
- May facilitate entrance of microorganisms through the skin

#### ② Stress and sleep deprivation

- Lower the mother's immune status and inhibit milk flow, thus causing engorgement

Immune suppression secondary to stress and depression which reduce her immune status

عادة في اسناد اعراضه لأول مرة

3/18/2022

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### Causative agents

#### ① \* \* S. aureus → most common pathogen

#### ② Coagulase-negative staphylococci

#### ③ $\beta$ -hemolytic streptococci

#### ④ Other → Streptococcus faecalis, Escherichia coli

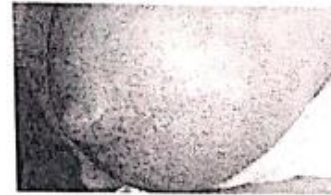
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Usually, This inflammatory process localized in one segment of the Breast or in one quadrant or even diffuse process

### Presentation

- o Pain – swelling – induration – redness – hotness – discharge
- o Early diagnosis and early management of mastitis is of value
- o The duration of symptoms before starting treatment is found to be the only independent risk factor for abscess development



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<https://www.babycentre.co.uk/a251/mastitis>  
<http://www.mayoclinic.org/diseases/conditions/mastitis/multimedia/mastitis/img/20008120>

### Management

- o Breast emptying with frequent nursing or manual pumping and
- o Empiric antibiotic therapy
  - Little consensus on the type or duration of antibiotic therapy and when to begin antibiotics
- o Abscess drainage
  - I&D (Incision and drainage)
  - US guided aspiration

→ To cover S. Aureus


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120 Sup

If mother stop Breast feeding this will worsen pathology  
 دس ريك اسك

o Breast feeding during mastitis?

- Continue breastfeeding
  - o Increasing the frequency of feeds
  - o Manually emptying the breast between feeds.
- Initiate feeds on the unaffected breast and change the infant's position at different feeds.
- Continued breastfeeding is not harmful to the infant
  - o Weaning / decrease feeding have an increased risk of developing a breast abscess.



<https://bit.ly/20110808mastitis.jpg>

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\* In this case dose baby at risk of

Infection?

No, Milk contain Immunoglobulin which protect system of the baby

→ o Analgesics (e.g. ibuprofen or acetaminophen)

→ o Increased fluid intake and adequate nutrition should be encouraged.

o Either cold or warm compresses may be used for comfort
 

- Warm compresses may aid in breast drainage

o Wear some type of non-constricting breast support

نفس حب وضع لرفعة ونسجني لها اول نفع

Antibiotic

In patient or out patient

- ↓
- If pt is stable, No Toxic → T+t as out pt
  - If pt is Toxic, septic, unstable → IV Antibiotic



## Periductal Mastitis:

### MAMMARY DUCT ECTASIA

→ Abnormal dilation of Mammary

- Also called periductal mastitis
- Distinctive clinical entity that can mimic invasive carcinoma clinically.
- Age: middle-aged to elderly parous women
- Presentation:
  - Nipple discharge (bloody, serous, creamy white, yellow) / Blue / green
  - Palpable subareolar mass
  - Nonscyclical mastalgia → chronic
  - Nipple inversion or retraction. → Because of Fibrosis
- The pathogenesis and the etiology of the disease are still being debated.
  - Smoking has been implicated as an etiologic factor in mammary duct ectasia. More association with young smokers

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### ◦ Pathologic findings

- Dilatation of major ducts in the subareolar region.
  - Accumulation of eosinophilic, granular secretions and foamy histiocytes within the duct epithelium and the lumen.
  - The inspissated luminal secretions may undergo calcifications
- Usually an asymptomatic lesion and is detected mammographically because of microcalcifications.

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Underlying Cause of Breast Cancer X  
Between Mammary Ectasia and Breast Cancer

**Management**

- There is no evidence in the literature indicating that mammary duct ectasia is associated with an increased risk for breast cancer.
- CNB → if clinical presentation and mammographic findings are suggestive for malignancy
- Generally does not require surgery and should be managed conservatively
  - Surgical excision of the main duct

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Breast Cancer  
Mass  
Biopsy  
Mass  
Occlusion

### Idiopathic Granulomatous Mastitis:

**GRANULOMATOUS MASTITIS** (chronic)

→ Rare, secondary to variable etiologies such as

Recurrent Attacks of Inflammation, Abscesses, Fistulas in Breast Skin with No well defined microorganisms

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**GRANULOMATOUS MASTITIS**

- A rare benign inflammatory breast disease of variable etiologies
  - Infectious etiology (e.g. TB)
  - Foreign material
  - Systemic autoimmune diseases (e.g. sarcoidosis and Wegener's granulomatosis)
  - Idiopathic → Most common Type
- Identification of the etiology requires microbiologic and immunologic testing in addition to histopathologic evaluation

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\* pathological stigma of ↓:-

عيب في لبنه  
Caseating :- TB

عيب في  
Non-caseating  
with presence  
of Sarcoidosis  
its → Sarcoidosis

### Idiopathic granulomatous mastitis

- ① A non-caseating granulomatous lesions without an identifiable cause.
- ② Diagnosis by excluding other possible causes  
↳ Exclude Sarcoidosis, Malignancy, TB
- ③ Cause is unknown;
  - may be attributed to a localized autoimmune response to retained and extravasated fat- and protein-rich secretions in the duct
- ④ Histologically
  - chronic non-caseating granulomatous inflammation typically limited to lobuli.

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### Presentation

- ✓ Ill defined painful mass in the breast
  - Can involve any quadrant
  - Bilateral involvement is rare
- ✓ Skin thickness, sinus and abscess formation
- ✓ Axillary lymphadenopathy
- ✓ Nipple retraction
- ✓ May be mistaken with breast carcinoma



✓ Severe case  
shows:-  
① multiple fistulae  
abnormal communication  
between  
space  
and epithelium

surface

In clinical practise -> look for

For every lady who present with Acute Mastitis, with Recurrent attacks → we should take Tissue Biopsy as in addition to drainage as Ttt in order to reach diagnosis

② Multiple scars → secondary  
↳ previous Surgery

- pt with :-
- ① Abscess: I+D
- ② Inflammation
- Antibiotics
- ③ Mass
- Surgery /
- Excision

تقديم ال presentation ال breast في العربية

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**Treatment**

- Complete surgical excision whenever possible plus steroid therapy.
- Spontaneous resolution occur

**Prognosis**

- 5-50% of the cases have
  - Persistence
  - Recurrence
  - Complications (e.g. abscess formation, fistulae, and chronic suppuration)
- long-term follow up is necessary in these patients

The main line of Ttt for pt with Granulomatous mastitis :- Idiopathic or not

Steroid ± Surgery

## Breast Cancer Screening:

**Mammography & Ultrasound**

**Mammogram:**

- Microcalcifications → most common mammographic finding
- Soft tissue density or asymmetry
- Magnification views more accurately predict the extent of disease.
- Can underestimate the pathological extent of the disease especially with micropapillary DCIS

**Factors affect Mamo:-**

- Breast Density
- Breast Implant
- post Menopausal HRT

Views

① Screening Mammography

② Diagnostic Mammography

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Screening Mammography

تجولة للثدي بدون وجود أعراض

VS

Diagnostic Mammography

تفحص للثدي في مناسبات معينة  
مثل: أعراض أو تغيرات بالثدي



الـ Mammogram هي أداة رقم 1 في Breast screen ، يعني الاختبار يكتشف الـ DCIS  
 الـ US لا يكتشف الـ DCIS ، يعني الـ sensitivity كـ 91% بس مجموع  
 الـ Mammogram كله لمر ٣٥-٤٠ سنة يكون مقبول فعادة سبيلك منه بجر الـ ٤.

أقل من ٣٥ سنة  
 Mamo for  
 screening  
 Breast الـ  
 يكون  
 High dense  
 بانكس الـ Mamo  
 (٢٠٠٠)  
 low sensitivity

### MRI

- The gold standard for radiologic assessment of DCIS.
- Not routinely employed in preoperative assessment of DCIS.
  - Cost.
  - Accessibility.
- Higher sensitivity than mammography for DCIS.
  - Can over estimate DCIS.
  - Higher false positive.
  - Higher unnecessary biopsies.
- Can detect contralateral breast cancer in DCIS patients.
  - Sensitivity → 71%
  - Specificity → 90%
- May lead to overtreatment and increase the performance of mastectomies.

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\* دائما اي مريضه بيدي عنان الـ Screening اول اشي بان عنه الـ  
 ① اذا عرها أقل من ٣٥ سنة MRI او US  
 ② اذا عرها ٣٥ فأفوق ± Mammogram ± US

18

الممسوحة ضوئيا بـ CamScanner

## BIRADS FOR BREAST DENSITY

BI-RADS CATEGORY	DESCRIPTION	PERCENTAGE OF POPULATION	SENSITIVITY, %	RELATIVE RISK OF BREAST CANCER
1	Almost entirely fat <25% density	10	88	—
2	Scattered fibroglandular densities 25%-50% density	43	82	—
3	Heterogeneously dense 51%-75% density	39	69	1.2 (compared with average breast density)
4	Extremely dense >75% density	8	62	1.4 (compared with average breast density)

Abbreviation: BI-RADS, Breast Imaging Reporting and Data System.  
 Adapted with permission from Pisano et al<sup>11</sup> and Carney et al.<sup>7</sup>



## Fibroadenoma:

### Fibroadenoma

Benign Tumor (most common Benign / Hard Tumor) → Called the mouse of Breast

Incidence: 8-10% (1955) BUT recent studies estimate it as high as 25% in Asymptomatic Women.

Any age; mainly 20-30 yrs. Old

Composed of epithelial and stromal elements. → Biphasic tumor means has 2 origins → Stromal elements, Epithelial elements.

Arise from TDLU

- Might arise from bcl-2 positive mesenchymal cells similar to solitary fibrous tumors.

### Fibroadenoma

Pathogenesis

- ✓ Unknown
- ✓ Hormonal stimulation (increased estrogen sensitivity, OCP in young age)
- ✓ EBV in immunosuppressed women

### Fibroadenoma

Clinical Presentation:

- ✓ Most are asymptomatic → Mass painless
- ✓ If symptomatic:
  - Firm, movable mass.
  - Painless BUT may be associated with discomfort when large or in pressure area (i.e. wire of female brassiere)
  - Multiple, bilateral in 20% of cases

usually it's single/unilateral but also can come multiple/bilateral

Medical attention ? Pain – Rapid growth – Cosmetic effect – Fear of malignancy

- it's important to be aware about → once Fibroadenoma grow in size rapidly, or if it associated with pain, or if has a sign of cosmetic effects, or if there is risk of malignancy such as in lady with Family History Breast cancer ⇒ it's needed to be removed

# Fibroadenoma

## Radiologic Findings:

- **Ultrasound:**
- Usually the first radiologic modality of diagnosis.
  - Round, oval, or lobular well circumscribed **hypoechoic mass**.

\* well defined  
Mass

حبيبات لونه ابيضه سوي

- **Mammogram:**
- Female > 35 years old
  - Personal or Family history of BC.
  - Clinically suspicious lesion

— عادة يتجلى بالعرفه اكثر من انه بطول

Aquatic shadow + —

# Fibroadenoma

## Pathologic Classification

### Size:

- < 5 cm
- > or equal 5 cm (Giant fibroadenoma or Juvenile giant fibroadenoma in young age)

### Microscopic architecture of ductal elements:

- • Pericanalicular.
- • Intracanalicular.
- • Simple Vs. Complex (i.e. with hyperplasia, metaplasia or sclerosing adenosis)

### Rare types:

- Tubular (pure) adenoma → prominent adenosis with very little stroma
- Lactational adenoma → lactational changes in secretory glands in fibroadenoma of pregnant or

## Fibroadenoma

### Management:

Follow up if  $\rightarrow$   $< 2.5$  cm, low growth, no personal or family history of BC

Excision  $\rightarrow$  Based on size/circumstances

- High growth rate
- Fibroepithelial lesion
- Complex lesions (i.e. may have slightly higher risk for BC)
- Patient desire, pain, cosmetics
- Older women
- FH of BC

Surgical excision vs. US-Guided vacuum-assisted biopsy device (i.e. long term data for recurrence not yet available)

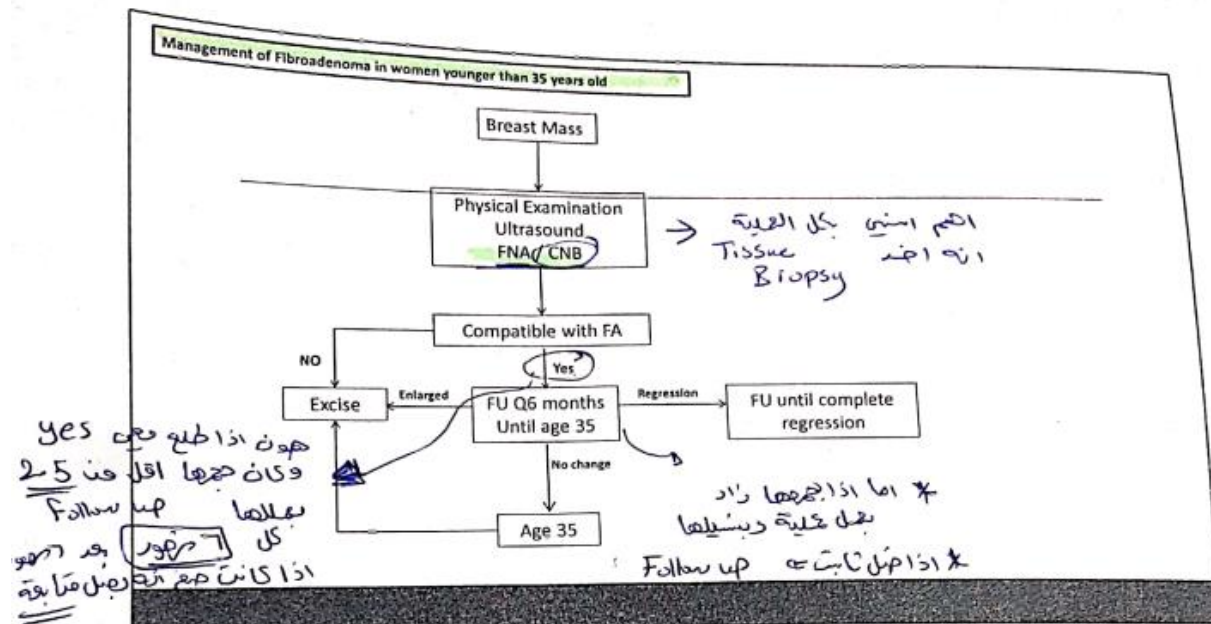
هذه الطريقة مفضلة score

يجب ملاحظة well defined / إذا اجبة بال ultrasound

popcorn calcification = calcification

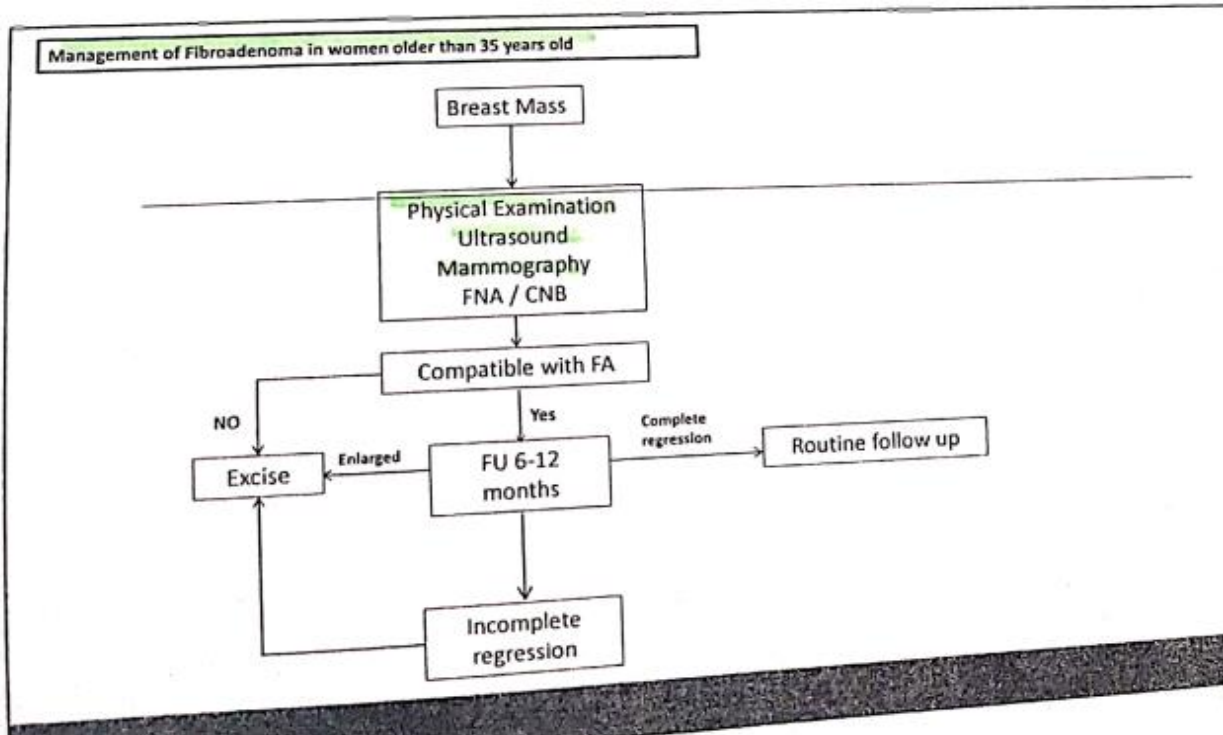
Acoustic shadow = calcified Fibroadenoma

كما ان صورة ال Mamogram واضحة فيضاد ال US 2 صور



\* All Fibroadenoma  $\rightarrow$  should Take Biopsy before diagnosis





## Sentinel LN:

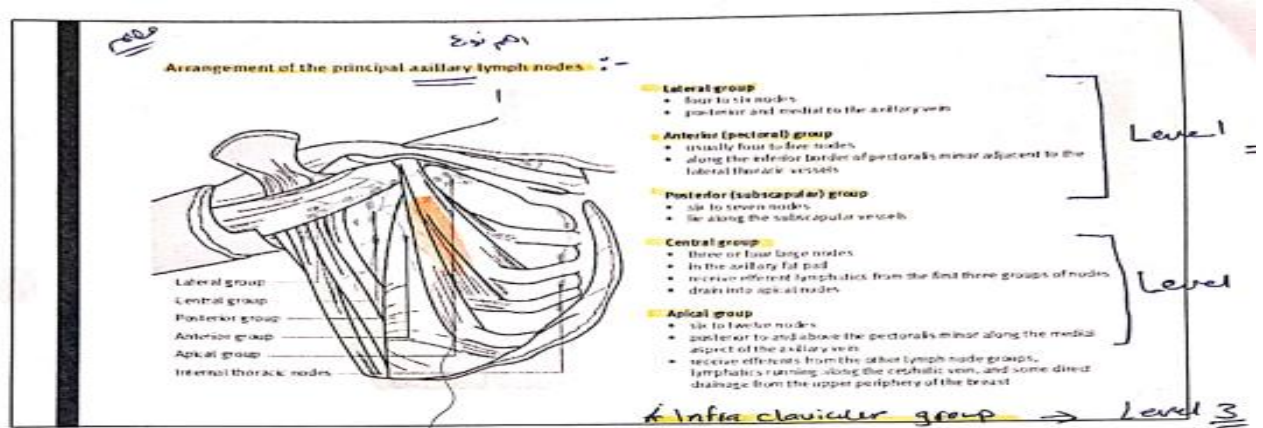
### 9 Sentinel Lymph node biopsy – SLNB

- ✓ ▶ SLN is the first lymph nodes drained by lymphatics from the breast.
- ✓ ▶ First used in Breast cancer by Armando Giuliano in 1994 (Blue dye)
  - ▶ At least one SLN is required to assess the status of axillary nodes.
  - ▶ If SLN is free, other lymph nodes are accepted to be clear.
  - ▶ The detection rate for SLN range between 95–100%
    - False negative rate for one SLNB around 10%
    - FNR decrease to around 1% if 3 or more SLN are harvested
  - ▶ No clinical significance for harvesting more than 3 SLN.

## Axillary Lymph node:

**Lymphatic drainage** مع مراجعة الواهم

- The axillary lymph nodes vary in number from 20 to 30 and are divided into five not wholly distinctive anatomical groups.
- Clinicians and pathologists often define metastatic axillary node spread simply into 3 levels
- Efferents from the apical nodes unite into the subclavian trunk. On the left side, this trunk usually drains directly into the thoracic duct. On the right side, the subclavian trunk may empty directly into the jugulosubclavian junction or into a common right lymphatic duct.
- About 75% of all lymphatic drainage of the breast passes to the axillary nodes. The remainder principally drains to the internal thoracic nodes.
- Any part of the breast may drain to either group, though there is a greater tendency for tumors situated in the medial part of the breast to disseminate to the internal thoracic nodes than for tumors in the lateral part of the breast to do so.



pectoralis minor muscle  
which is mainly dividing  
lymph nodes into 3 groups:

- First Level** ① lateral inferior of pectoralis minor
- Second level** ② posterior pectoralis minor
- Third level** ③ Above and medial to pectoralis minor muscle

## Luminal Classification:

*Handwritten notes:*  
 Luminal 1+2  
 Non Luminal  
 Worst one  
 - poor prognosis  
 ↑ rate of metastasis early  
 Mitotic rate  
 بضع من طول  
 برداشت  
 اسف  
 Ki 67

Molecular subtype	Biomarker profile
Luminal A <i>low grade</i>	ER+ and/or PR+ HER2- and low Ki67 (<14%)
Luminal B	ER+ and/or PR+ and HER2+ (luminal-HER2 group) ER+ and/or PR+, HER2-, and high Ki67 (>14%)
HER2 enriched	ER-, PR-, and HER2+
Basal-like	ER-, PR-, HER2-, and CK5/6 and/or EGFR+

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44

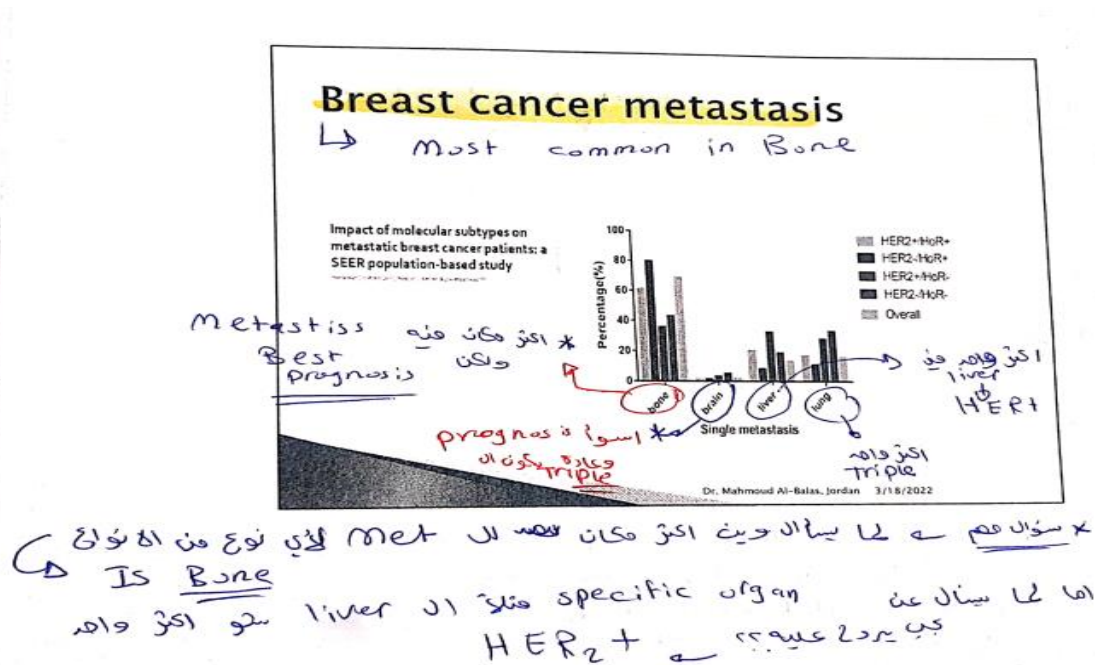
*Handwritten note:* 100

Molecular subtypes			
	Luminal	HER2	Basal
Gene expression pattern	<input type="checkbox"/> High expression of hormone receptors and associated genes (luminal A > luminal B)	<input type="checkbox"/> High expression of HER2 and other genes in amplicon <input type="checkbox"/> Low expression of ER and associated genes	<input type="checkbox"/> High expression of basal epithelial genes, basal cytokeratins <input type="checkbox"/> Low expression of ER and associated genes <input type="checkbox"/> Low expression of HER2
Clinical features	<input type="checkbox"/> ~70% of invasive breast cancers ER/PR positive <input type="checkbox"/> Luminal B tend to be higher histological grade than luminal A <input type="checkbox"/> Some overexpress HER2 (luminal B)	<input type="checkbox"/> ~15% of invasive breast cancers ER/PR negative <input type="checkbox"/> More likely to be high grade and node positive	<input type="checkbox"/> ~15% of invasive breast cancers <input type="checkbox"/> Most ER/PR/HER2 negative ('triple negative') <input type="checkbox"/> BRCA1 dysfunction (germline, sporadic) <input type="checkbox"/> Particularly common in African-American women
Treatment response and outcome	<input type="checkbox"/> Respond to endocrine therapy (but response to tamoxifen and aromatase inhibitors may be different for luminal A and luminal B) <input type="checkbox"/> Response to chemotherapy variable (greater in luminal B than in luminal A) <input type="checkbox"/> Prognosis better for luminal A than luminal B	<input type="checkbox"/> Respond to trastuzumab (Herceptin) <input type="checkbox"/> Respond to anthracycline-based chemotherapy <input type="checkbox"/> Generally poor prognosis	<input type="checkbox"/> No response to endocrine therapy or trastuzumab (Herceptin) <input type="checkbox"/> Appear to be sensitive to platinum-based chemotherapy and PARP inhibitors <input type="checkbox"/> Generally poor prognosis (but not uniformly poor)

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## Breast Cancer metastasis:



## Breast lesions:

120 120 120 per cm

FCC- Dupont and Page Classification		
Risk of malignancy base Lc → <b>Nonproliferative lesions</b>	<ul style="list-style-type: none"><li>Cysts</li><li>Papillary apocrine changes</li><li>Epithelial-related calcifications</li><li>Mild epithelial hyperplasia</li><li>Ductal ectasia</li><li>Nonsclerosing adenosis</li><li>Periductal fibrosis</li></ul>	<ul style="list-style-type: none"><li>70% of cases</li><li>No increase in risk of BC</li></ul> <div>3/18/2022 Dr. Mahesh Patel M.B., MRB, S.M.C.</div>
<b>Proliferative lesions without atypia</b>	<ul style="list-style-type: none"><li>Moderate or florid ductal hyperplasia of the usual type</li><li>Sclerosing adenosis</li><li>Radial scar</li><li>Intraductal papilloma or papillomatosis</li></ul>	<ul style="list-style-type: none"><li>BC RR increase 1.9 times</li></ul> <div><u>Rise of Breast cancer</u></div>
<b>Proliferative lesions with atypia (atypical hyperplasia)</b>	<ul style="list-style-type: none"><li>Atypical ductal hyperplasia (ADH)</li><li>Atypical lobular hyperplasia (ALH)</li></ul>	<ul style="list-style-type: none"><li>BC RR increase 3.5 times</li><li>&gt; 80% of patients with atypical hyperplasia do not develop invasive cancer during their lifetimes</li></ul> <div><u>Risk</u></div>

Category is  
عنوان معرفه هو اعلیٰ

## Staging of Breast Cancer:

## Staging of B.C

AJCC 7th Edition Staging for Breast Cancer

3.5 cm Tumor  
T2

3.5 cm Tumor  
ulceration  
T4B

3.5 cm Tumor  
ulceration  
T4B

Stage	Tx	N0	M0
Stage 0	T1*	N0	M0
Stage IA	T1*	N1	M0
Stage IB	T1*	N1**	M0
Stage IIA	T2	N1	M0
Stage IIB	T2	N2	M0
Stage IIIA	T3	N1	M0
Stage IIIB	T3	N2	M0
Stage IIIC	T3	N3	M0
Stage IVA	T4	N1	M1
Stage IVB	T4	N2	M1
Stage IVC	T4	N3	M1
Stage IV	Any T	Any N	M1

\*T1 includes T1mi.  
\*\*T0 and T1 tumors with nodal micrometastases only are excluded from Stage IA & are classified Stage IB

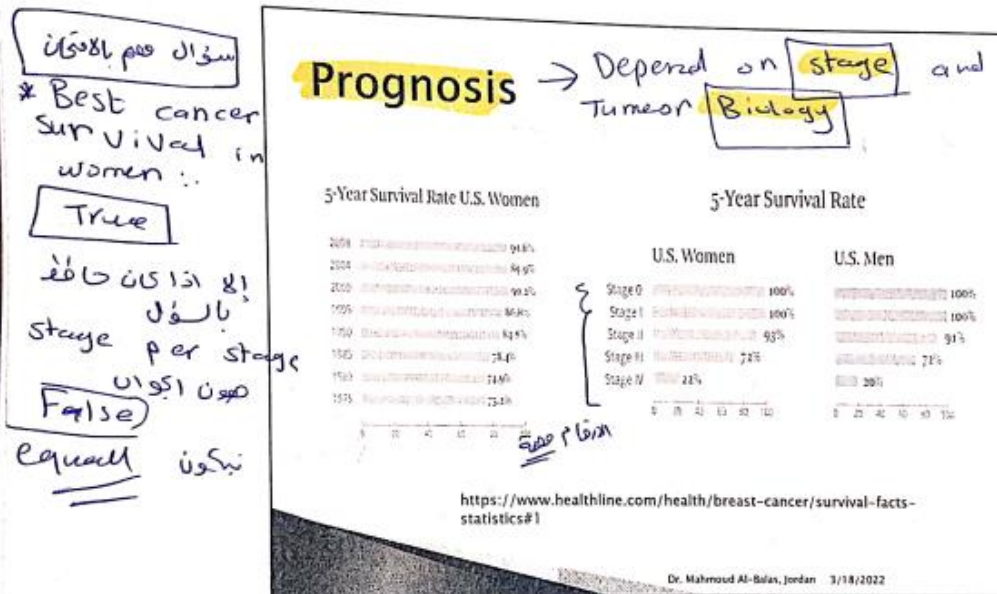
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\* مرض سرطان الثدي  
 Inflammatory carcinoma  
 T4d  
 T1  
 Fracture

depend on  
 clinical presentation  
 N2 on primary tumor site  
 diameter  
 size

TNM Class	Criteria
T0	No evidence of primary tumor
Tis	Carcinoma in situ
T1	≤ 1 cm
T1a	≤ 0.5 cm
T1b	> 0.5 to ≤ 1 cm
T2	> 1 to ≤ 2 cm
T3	> 2 to ≤ 5 cm
T4	> 5 cm
T4a	Any size tumor with direct extension to: a) Chest wall, not including pectoralis muscle
T4b	Skin edema, ulceration, satellite skin nodule
T4c	T4a and T4b
T4d	Inflammatory carcinoma

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\* prognosis in men is equally to women  
 فالمرضى الذين لا يكتشفون المرض في وقت مبكر

overall survival in men is worse than women

Advanced stage screening picks men at