

# BENIGN BREAST DISEASE



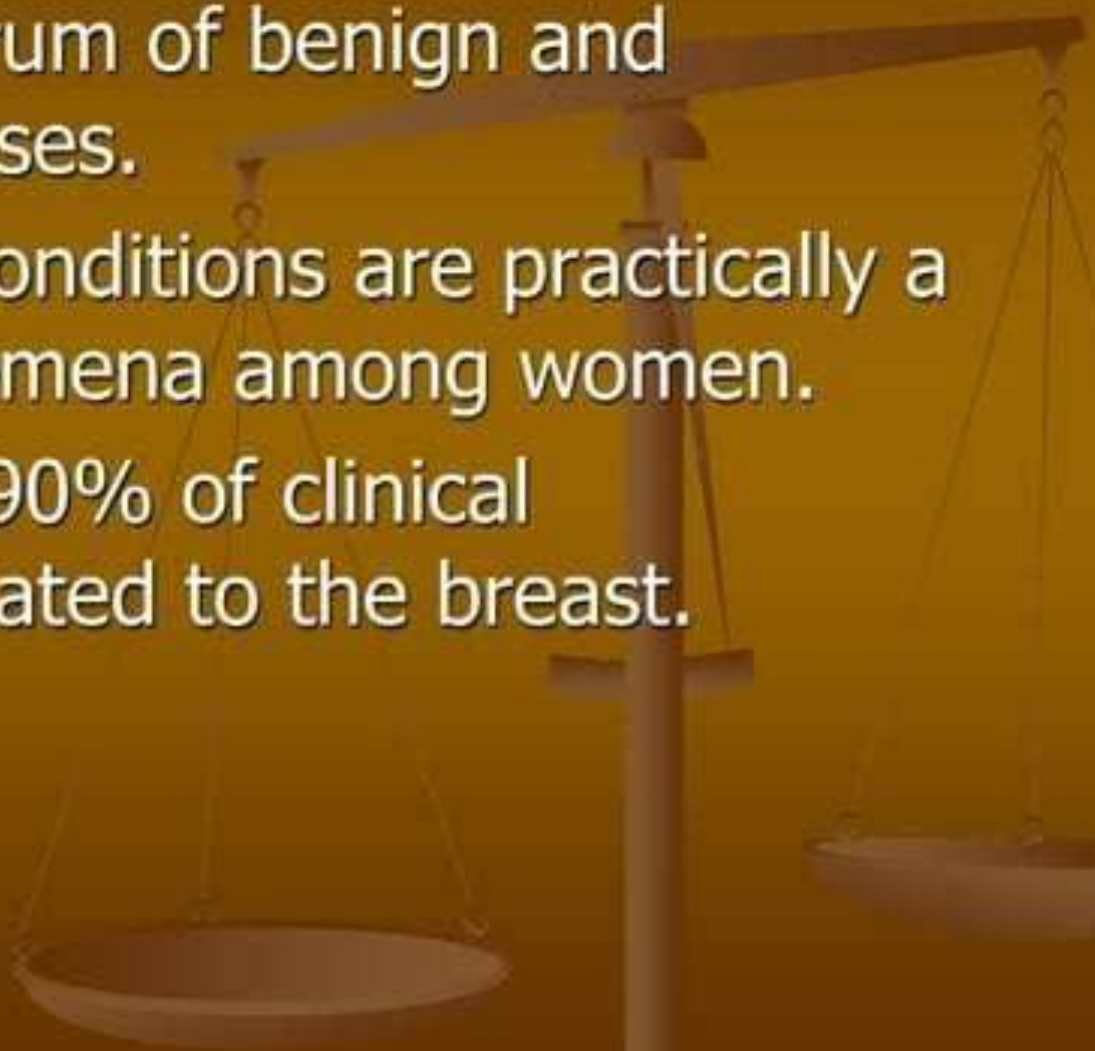
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# ***SEMINAR PLAN***

- ***Introduction***
  - ***Anatomy***
  - ***Congenital abnormalities***
  - ***Different classifications– BBD***
  - ***Classification : ANDI***
  - ***Symptoms and Possible Diagnosis***
  - ***Diagnostic modalities***
  - ***Aims of Triple assessment***
  - ***Genetics***
  - ***Recent Advances***
  - ***References***
  - ***Conclusion : Take home message***
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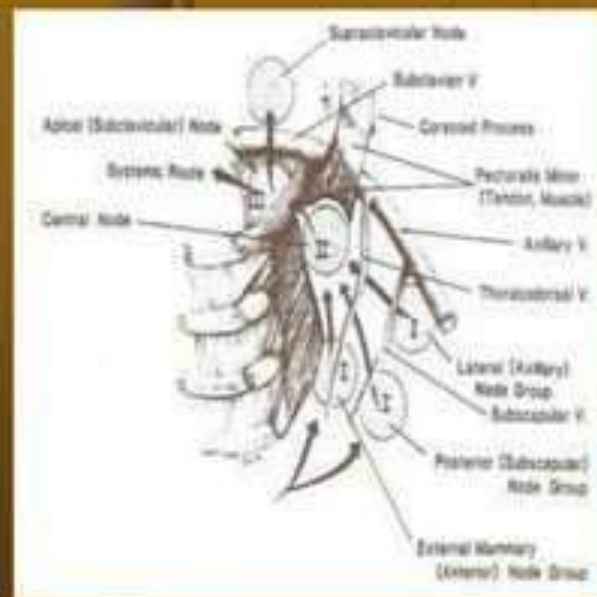
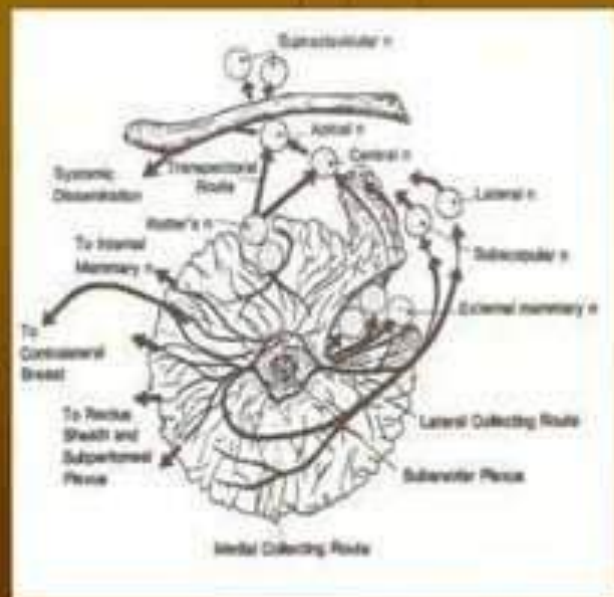
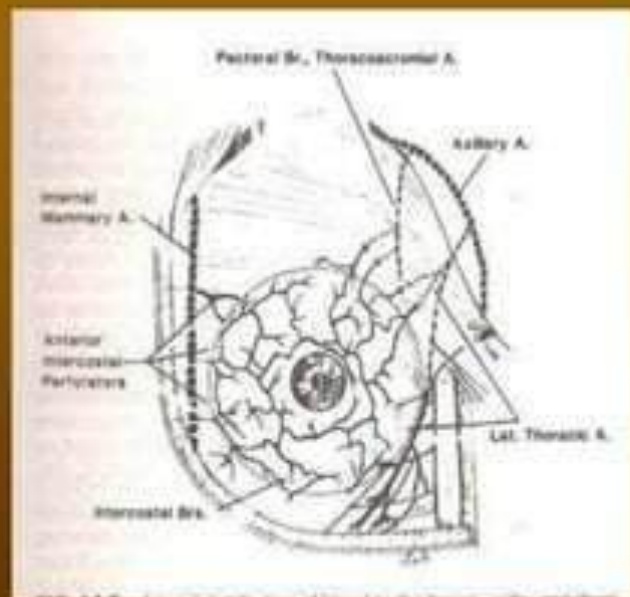
# INTRODUCTION

- Host to a spectrum of benign and malignant diseases.
  - Benign breast conditions are practically a universal phenomena among women.
  - It accounts for 90% of clinical presentation related to the breast.
- 



# ANATOMY:

- Boundaries
- Arterial blood supply
- Lymphatic drainage



# ANATOMY

## ■ LOCATION

BREAST LIES IN THE SUPERFICIAL FASCIA OF THE PECTORAL REGION

A SMALL EXTENSION CALLED THE AXILLARY TAIL (OF SPENCE) PIERCES THE DEEP FASCIA AND LIES IN THE AXILLA

## EXTENT

VERTICALLY- FROM SECOND TO SIXTH RIB.

HORIZONTALLY- FROM LATERAL BORDER OF STERNUM TO THE MID AXILLARY LINE.

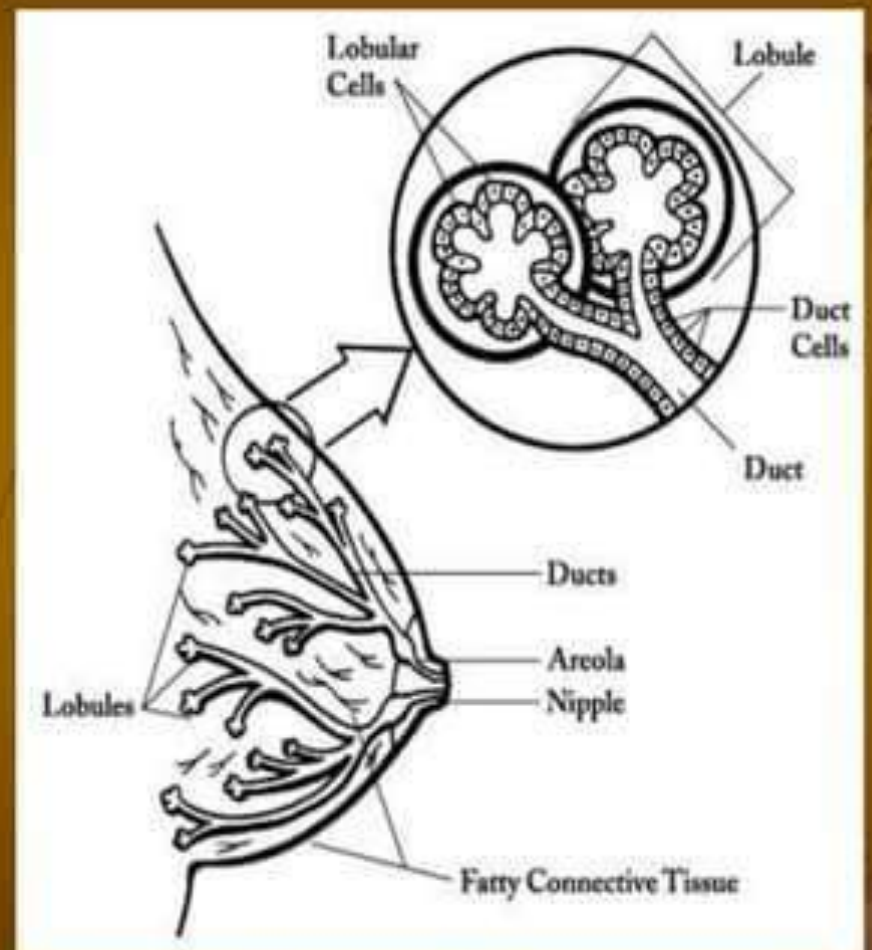


# STRUCTURE OF THE BREAST

- 1. SKIN  
IT COVERS THE GLAND AND PRESENT THE FOLLOWING
  - A. NIPPLE
    - PRESENT JUST BELOW THE CENTRE OF THE BREAST
    - AT THE LEVEL OF FOURTH INTERCOSTAL SPACE
    - PIERCED BY 15-20 LACTIFEROUS DUCTS
  - B. AREOLA
    - SKIN AROUND THE BASE OF THE NIPPLE IS PIGMENTED AND FORMS THE CIRCULAR AREA
    - RICH IN MODIFIED SEBACEOUS GLAND



# Anatomy



# PARENCHYMA

- MADE OF GLANDULAR TISSUE WHICH SECRETE MILK
- CONSIST OF 15-20 LOBES
- EACH LOBE IS CLUSTER OF ALVEOLI AND IS DRAINED BY LACTIFEROUS DUCT
- LACTIFEROUS DUCT CONVERGE TOWARDS THE NIPPLE AND OPEN ON IT
- NEAR TERMINAION-EACH DUCT HAS DILATATION –LACTIFEROUS SINUS



# STROMA

- FORMS SUPPORTING FRAMEWORK
- PARTLY FIBROUS AND PARTLY FATTY
- FIBROUS STROMA-FORMS SEPTA-KNOWN AS SUSPENSORY LIGAMENT OF COOPER-ANCHOR THE GLAND TO THE PECTORAL FASCIA
- FATTY STROMA-FORMS THE MAIN BULK OF THE GLAND

# BLOOD SUPPLY

- BRANCH OF AXILLARY ARTERY

:SUPERIOR THORACIC

:ACROMIO THORACIC

:LATERAL THORACIC

## BRANCH OF SUBCLAVIAN ARTERY

: INTERNAL THORACIC

LATERAL BRANCHES OF POSTERIOR INTERCOSTAL  
ARTERIES

# VENOUS DRAINAGE

- SUPERFICIAL VEINS-- DRAIN INTO
  - INTERNAL THORACIC VEINS
  - VEINS OF LOWER PART OF NECK
- DEEP VEINS--- DRAIN INTO
  - INTERNAL THORACIC
  - AXILLARY
  - POSTERIOR INTERCOSTAL VEINS



# LYMPHATIC VESSEL



- SUPERFICIAL LYMPHATIC

- DRAIN THE SKIN OF THE BREAST
- EXCEPT FOR THE NIPPLE AND AREOLA

## DEEP LYMPHATIC

- DRAIN THE PARENCHYMA
- NIPPLE AND AREOLA

# LYMPHATIC DRAINAGE

AXILLARY NODES-- ANTERIOR

CENTRAL

POSTERIOR

LATERAL

APICAL

INTERPECTORAL

INTERNAL MAMMARY OR PARASTERNAL

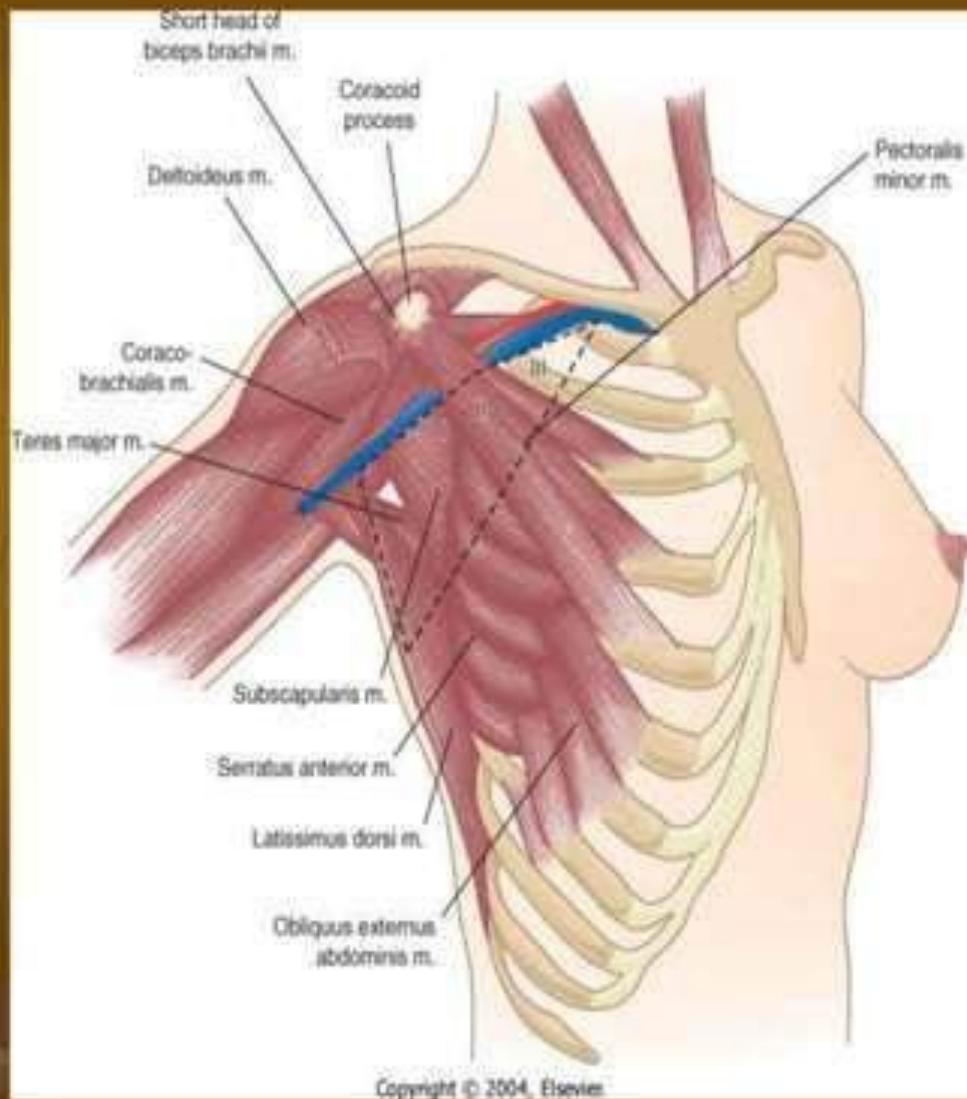
OTHERS--

SUPRACLAVICULAR, CEPHALIC, POSTERIOR

INTERCOSTAL ,SUBDIAPHRAGMATIC

# Anatomy

- Axillary lymph nodes defined by pectoralis minor muscle
  - Level 1 – lateral
  - Level 2 – posterior
  - Level 3 – medial
- Long Thoracic Nerve
  - Serratus anterior
- Thoracodorsal Nerve
  - Latissimus Dorsi
- Intercostalbrachial Nerve
  - Lateral cutaneous
  - Sensory to medial arm & axilla





## DISORDERS OF DEVELOPMENT

- DURING THE SIXTH WEEK OF FETAL DEVELOPMENT- TWO STREAKS OF ECTODERMAL THICKENING- THE MILK LINES- APPEAR ON THE VENTRAL SIDE OF THE HUMAN EMBRYO-EXTENDS FROM AXILLA TO THE GROIN.
- THE LINES DISAPPEAR BY EIGHT WEEK- EXCEPT IN THE PECTORAL REGION- WHERE THEY PERSIST AND DEVELOP RUDIMENTARY DUCTS AT THE SITE OF FUTURE BREAST
- FAILURE OF MILK LINES TO DISAPPEAR ACCOUNTS FOR ANOMALIES

# Kajavas classification of ectopic breast

1. Complete breast(polymastia)
- 2.glandular tissue with papilla but no areola
- 3.glandular tissue with areola but no papilla
- 4.glandular tissue only
- 5.papilla and areola only
- 6.papilla only(polythelia)
- 7.areola only(polythelia areolis)
- 8.patch of hair only(polythelia pilosa)



# CONGENITAL ABNORMALITIES

- **AMAZIA**- CONGENITAL ABSENCE OF BREAST MAY OCCUR ON ONE OR BOTH SIDES
- **POLAND SYNDROME**- AMAZIA+ABSENCE OF STERNAL PORTION OF PECTORALIS MAJOR. FAMILIAL AND HEREDITARY.
- **POLYMAZIA**- AXILLARY BREASTS HAVE BEEN RECORDED IN-----AXILLA/ GROIN/BUTTOCK/THIGH
- **MASTITIS OF INFANTS**--- KNOWN AS "WITCH MILK"  
---STIMULATION BY MATERNAL PROLACTIN  
**DIFFUSE HYPERTROPHY** -ALTERATION IN THE SENSITIVITY TO OESTROGENIC HORMONES




# Benign breast diseases

- 1.FIBROCYSTIC CHANGES
  - 2.Fibroadenoma
  - 3.Juvenile fibroadenoma
  - 4.Cysts
  - 5.Mastalgia
  - 6.Duct papilloma
  - 7.Ductal hyperplasia
  - 8.Gynecomastia
  - 9.Adoloscant gynecomastia
  - 10.Atypical ductal hyperplasia
  - 11.Duct ectasia
- 

13. LIPOMA
14. Ductal papillomatosis
15. Fat necrosis
16. Subareolar abscesses
17. Lactating adenoma
18. Cutaneous inclusion cyst
19. Excessive ectopic papillary breast tissue
20. Atypical lobular hyperplasia
21. Chronic nipple dermatitis
22. Galactorrhoea
23. Radial scar
24. adenoma
25. Hamartoma
26. Nipple adenoma



- 
27. Granular cell tumor
  28. Breast edema
  29. Polythelia
  30. Bloody nipple discharge with pregnancy
  31. Nipple abnormalities
  32. Galactocele
  33. Foreign body
  34. Breasts infarction
  35. Mondors disease
  36. Silicon mastitis
  37. angioliipoma



# CLASSIFICATION BASED ON CLINICAL FEATURES

Physiological swelling and tenderness

Nodularity

Mastalgia

Dominant lumps

- Gross cysts
- Galactocele
- Fibroadenoma

Nipple discharge

- Galactorrhea
- Abnormal nipple discharge

Breast infections

- Intrinsic mastitis
- 1. Postpartum engorgement
- 2. Lactational mastitis
- 3. Lactational breast abscess
- Chronic recurrent subareolar abscess
- Acute mastitis associated with macrocystic breasts
- Extrinsic infections



# BENIGN BREAST DISEASE

## NONPROLIFERATIVE LESIONS

- CYSTS
- PAPILLARY APOCRINE CHANGE
- EPITHELIAL RELATED CALCIFICATION
- MILD HYPERPLASIA

## PROLIFERATIVE LESIONS WITHOUT ATYPIA

INTRA DUCTAL PAPPILOMAS  
SCLEROSING ADENOSIS  
MODERATE OR FLORID HYPERPLASIAS

# ATYPICAL HYPERPLASIA



ATYPICAL DUCTAL HYPERPLASIA

ATYPICAL LOBUAR HYPERPLASIA



# ANDI classification ( Hughes et al, 1992 )

Normal

Aberration

Disease ??

*Regenerative process*

*Involution*

*Cysts, duct ectasia, mild epithelial hyperplasia,*

*Cyclical & secretory*

*cyclical mastalgia & nodularity*

*Development*

*Spectrum of breast changes*

*fibroadenoma, juvenile hypertrophy*

*Periductal mastitis*

*Epithelial hyperplasia with atypia*

*Giant fibro adenoma (> 5cms)*

*Multiple fibroadenoma (> 5 per breast)*

**GIGANTOMASTIA**

## UNIFYING CONCEPT FOR ANDI

- ANDI IS PRESENTED AS A TERMINOLOGY AND FRAMEWORK FOR BBDs.

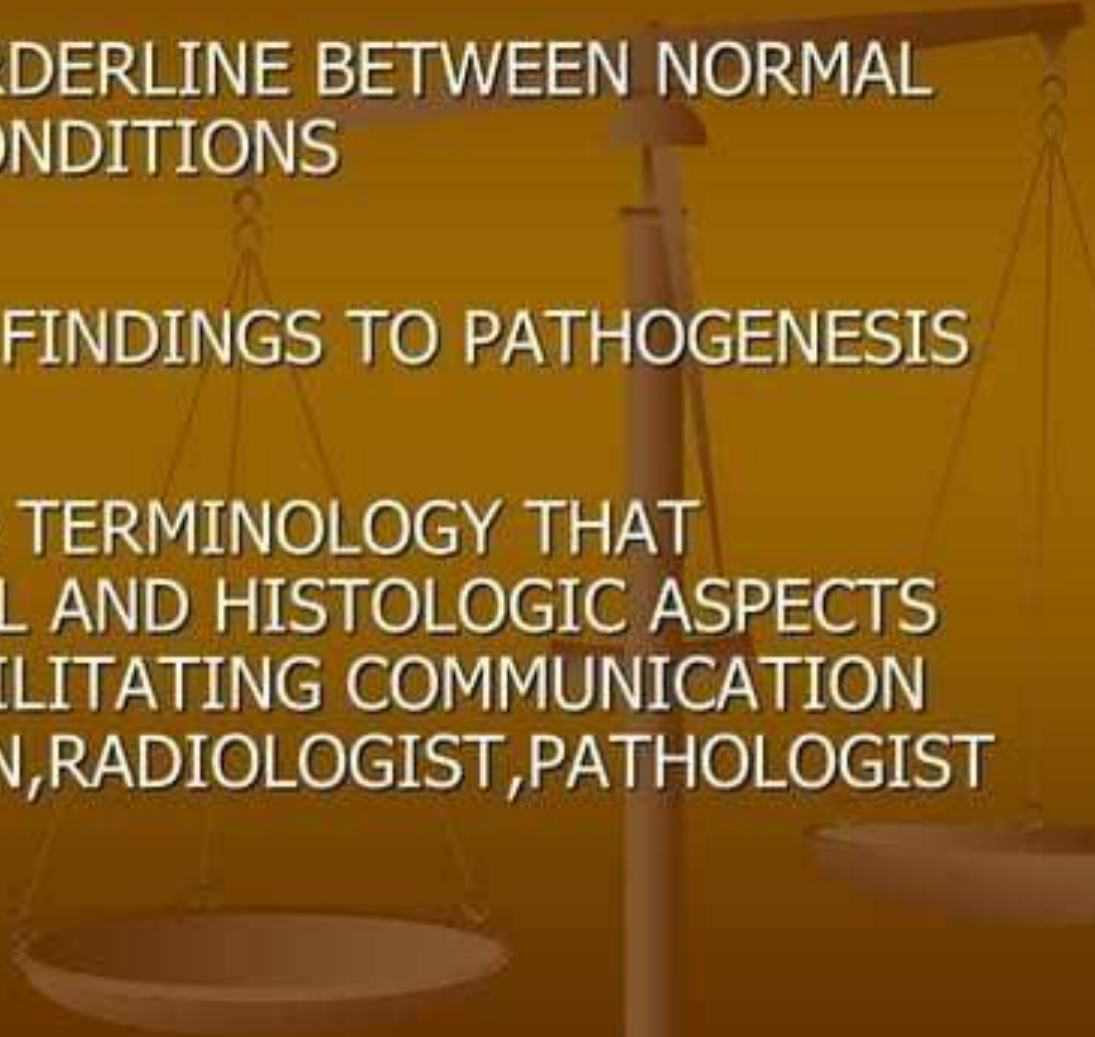
2 main principles:

- A. BBDs arise as a result of dynamic changes occurring through 3 main reproductive period of life...
  - EARLY REPRODUCTIVE PERIOD
  - LATE REPRODUCTIVE PERIOD
  - INVOLUTION

THESE DISORDERS CAN BE SEEN AS A SPECTRUM THAT EXTENDS FROM THE NORMAL PROCESS TO OVERT DISEASE



# ANDI CONCEPT

- JUSTIFIES THE USE OF THE TERM DISORDER RATHER THAN DISEASE
  - STRESSES THE BORDERLINE BETWEEN NORMAL AND ABNORMAL CONDITIONS
  - RELATES CLINICAL FINDINGS TO PATHOGENESIS
  - PROVIDES A CLEAR TERMINOLOGY THAT ADDRESSES CLINICAL AND HISTOLOGIC ASPECTS INDIVIDUALLY, FACILITATING COMMUNICATION BETWEEN SURGEON, RADIOLOGIST, PATHOLOGIST AND PATIENT
- 



# Symptoms & possible diagnosis

## 1.Lump

*Fibroadenoma  
Juvenile Fibroadenoma  
Giant fibroadenoma  
Phyllodes tumours  
Cysts  
Galactocele*

## 4.Nipple change

*Developmental inversion of nipple  
Acquired nipple retraction : duct ectasia, periductal mastitis etc  
Eczema  
Paget's disease etc.*

## 2.Pain

*Mastalgia : Cyclical & Non cyclical*

## Infections : Lactational & Non lactational

## 3.Nipple discharge

*Physiological  
Bloodstained in pregnancy  
Intraductal papillomas and associated conditions  
Duct Ectasia Galactorrhoea*

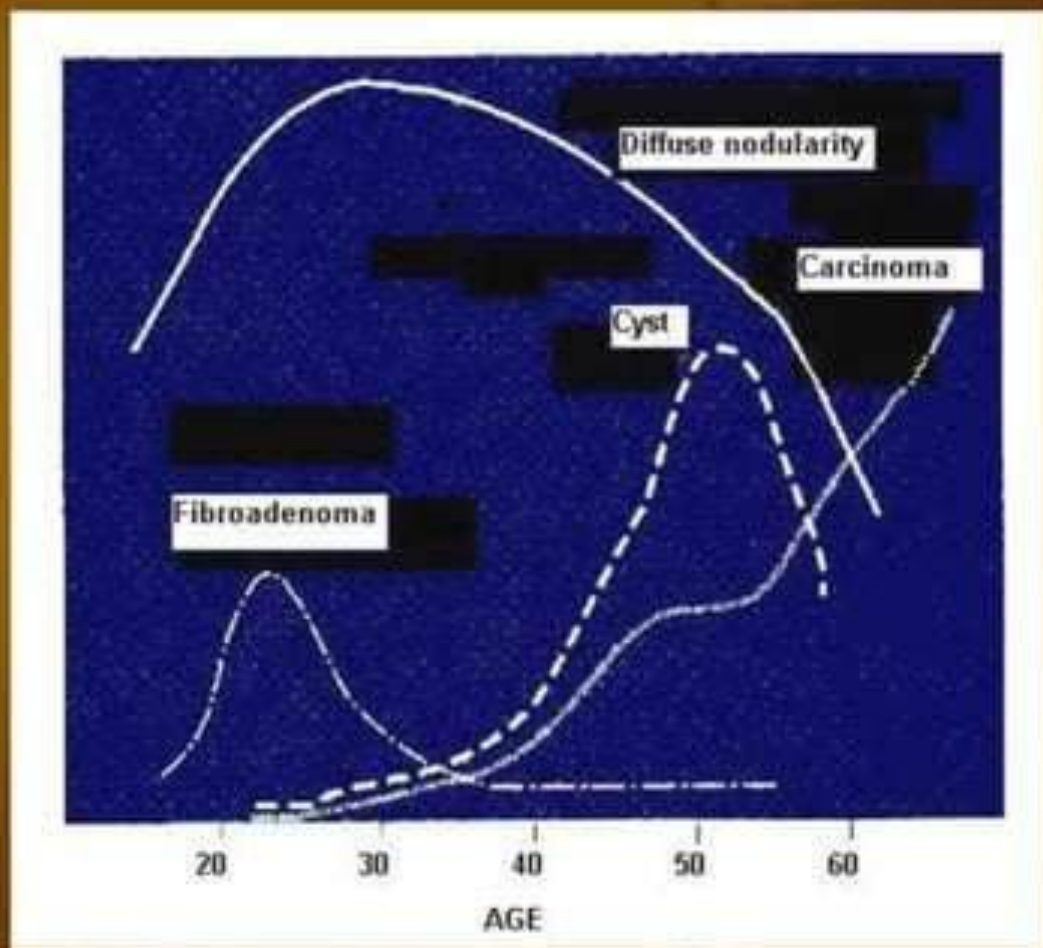
## 5.Cosmetic & other problems

*Comon cosmetic problems : size, shape & symmetry of breast mound  
Uncommon cosmetic problems : developmental & acquired  
Trauma  
Rare problems*

# 1. Lump

## DISCRETE LUMP

- FIBROADENOMA
- CYSTS
- CARCINOMA



*Age incidence of lumps in the breast*

# FIBROADENOMA

- BENIGN TUMOUR IN WHICH EPITHELIAL CELLS ARE ARRANGED IN A FIBROUS STROMA.
- TYPES-
  - PERICANALICULAR
  - INTRACANALICULAR
  - GIANT INTRACANALICULAR

C/f--- 1. COMMON BETWEEN 20-40 YRS  
2. PRESENT WITH PAINLESS LUMP IN BREAST.  
FIRM  
DISCRETE  
ROUND OR LOBULATED MASS  
NONTENDER  
FREELY MOBILE --- BREAST MOUSE



# ***Fibroadenoma***

## ***Types***

***Solitary***

***Few (< 5 / breast)***

***Multiple (> 5 / breast)***

***Giant (> 4 / 5 cms) & Juvenile***

## ***Natural History***

***Majority remain small & static***

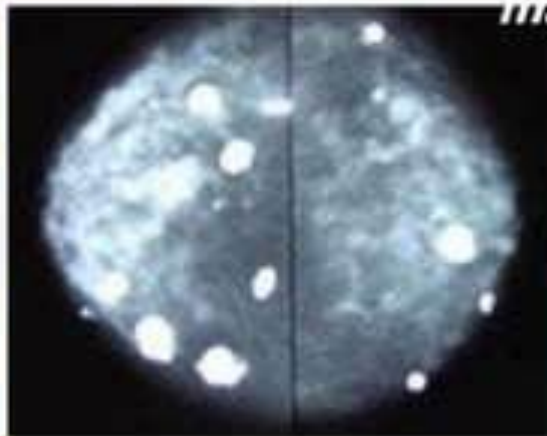
***50% involute spontaneously***

***No future risk of***

***malignancy***



***Juvenile fibroadenoma  
in a 15 year old***



***Multiple calcified fibroadenomas  
in a 40 year old***



***Giant fibroadenoma  
in a 23 year old***

CUT SURFACE--- GRAY WHITE, SMALL  
,PUNCTATE ,YELLOW TO PINK SOFT AREAS  
AND SLIT LIKE SPACES

MICROSCOPICALLY--EPITHELIAL AND  
STROMAL COMPONENT

ANCIENT FIBROADENOMA- IN OLDER LESIONS  
AND IN POST MENOPAUSAL PATIENTS,THE  
STROMA MAY BECOME HYALINIZED ,CALCIFIED  
OR EVEN OSSIFIED.

INFARCTION- PARTIAL ,SUB TOTAL OR TOTAL  
PREGNANCY AND LACTATION –

# Fibroadenoma

SWEDISH MEDICAL CENTER

65

4cm 12LA39  
BREAST  
FROZEN  
26G  
84DR

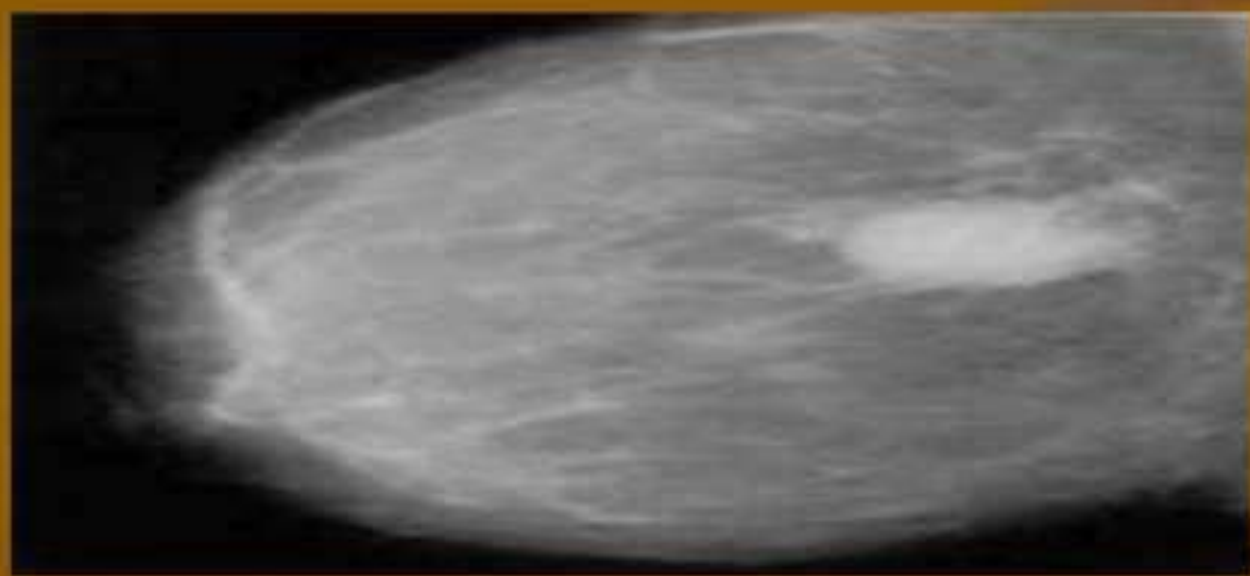


FIBROADENOMA

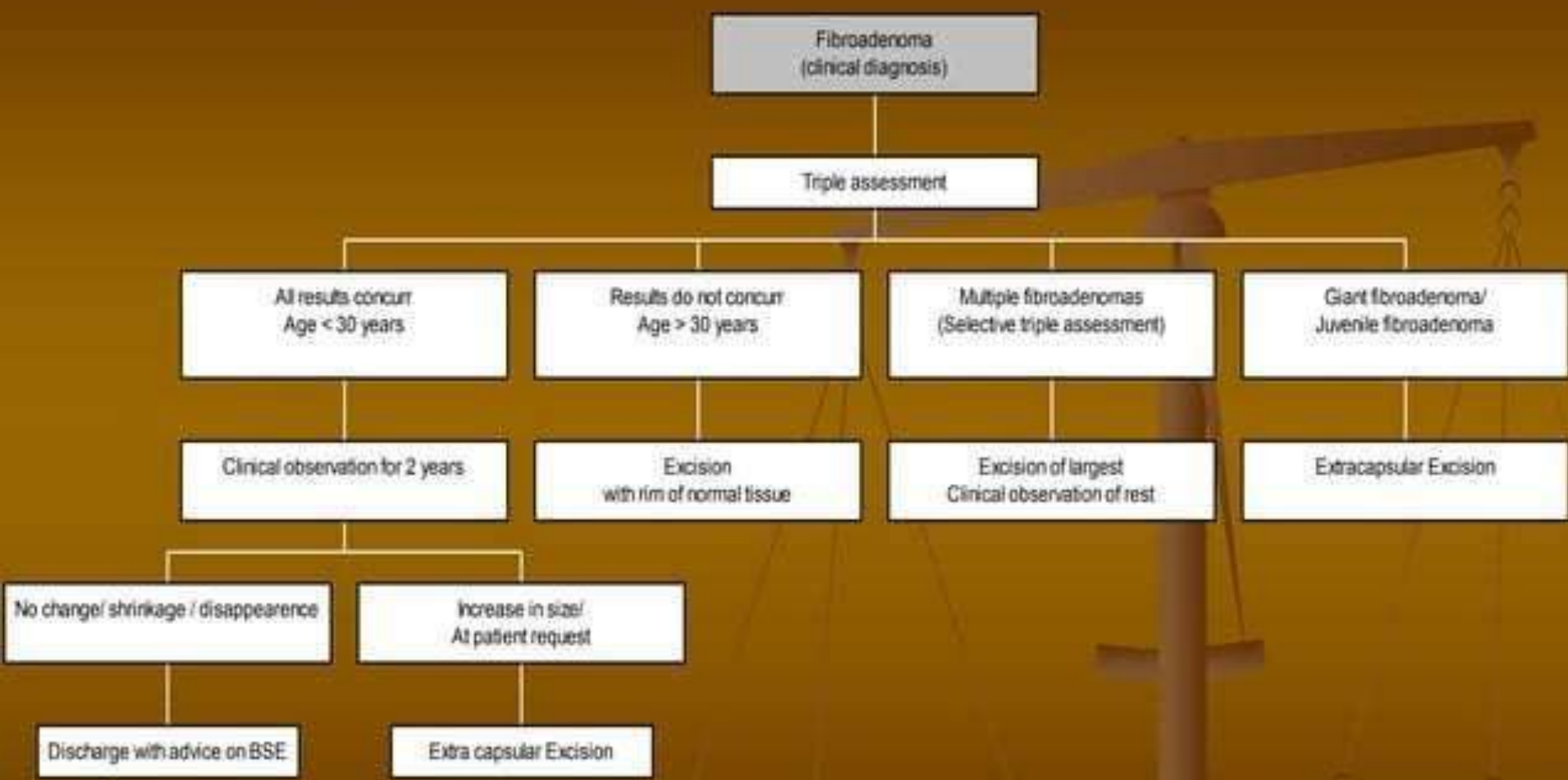
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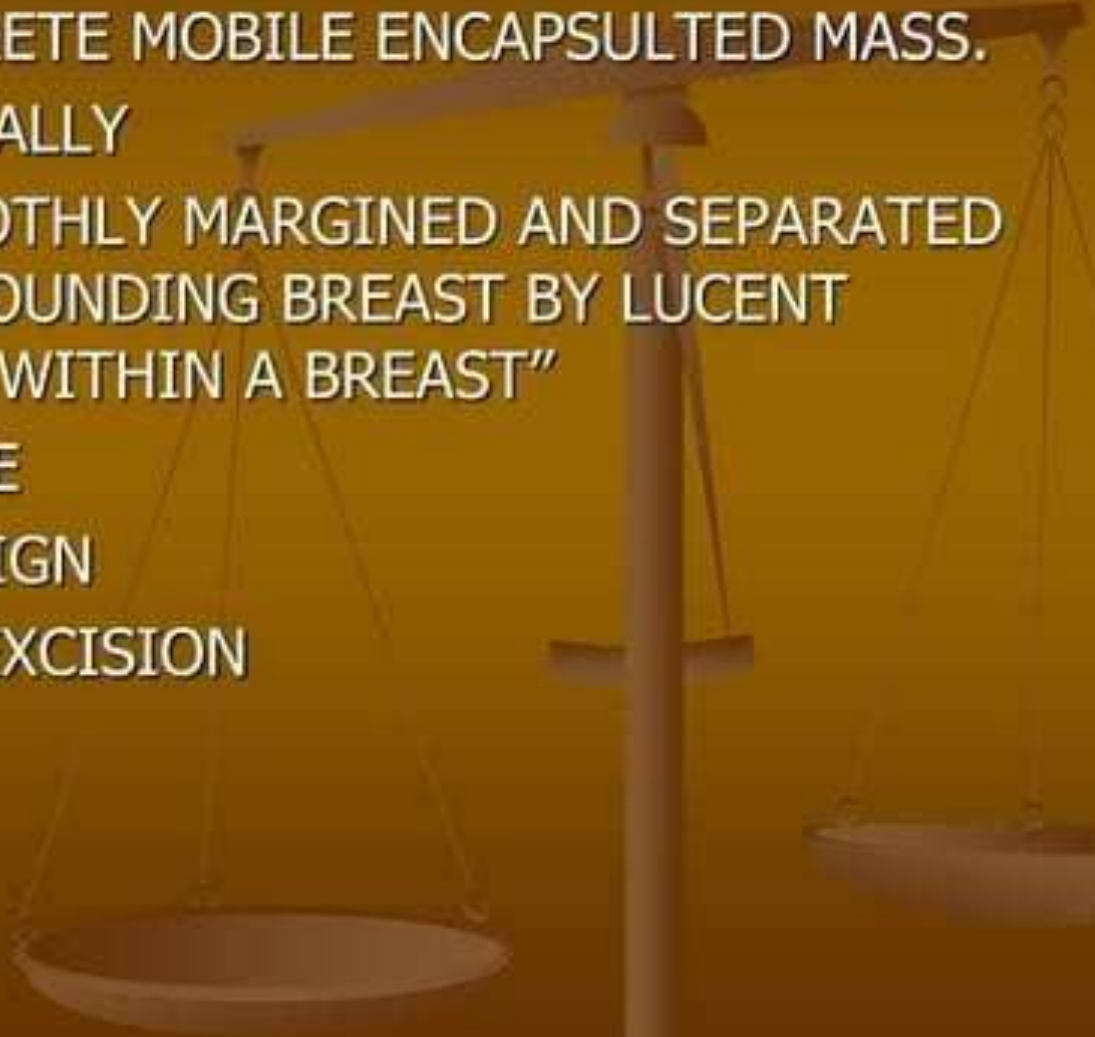




# Management algorithm for Fibroadenomas



**Chances of malignancy masquerading as Fibroadenoma**  
Age 20 – 25 yrs 1: 3000 possibility  
Age 25 – 30 yrs 1: 300 possibility

- 
- ENCAPSULATED TUMORS COMPOSED OF ABNORMAL MIXTURES OF NORMAL MAMMARY TISSUES
  - CLINIALLY-DISCRETE MOBILE ENCAPSULTED MASS.
  - MAMMOGRAPHICALLY
  - SMOOTHLY MARGINED AND SEPARATED FROM THE SURROUNDING BREAST BY LUCENT HALO---"BREAST WITHIN A BREAST"
  - SINGLE/MULTIPLE
  - INVARIABLY BENIGN
  - TREATMENT BY EXCISION



# ADENOMA

- WELL CIRCUM SCRIBED TUMORS COMPOSED OF BENIGN EPITHELIAL ELEMENTS WITH SPARSE IN CONSPICIOUS STROMA
- TWO GROUPS-TUBULAR ADENOMA
- LACTATING ADENOMA
- **ADENOMA OF NIPPLE**
  - DISCRETE PALPABLY FIRM TUMOR OF THE PAPPILA OF THE NIPPLE
  - ASSOCIATED WITH PRURITUS/PAIN
  - SEROUS OR BLOODY DISCHARGE
  - BIOPSY- -- FOR DIAGNOSIS
  - TREATMENT- COMPLETE EXCISION WITH NORMAL SURGICAL MARGIN

# SYRINGOMA OF THE NIPPLE

- PRESENT AS ONE TO THREE cm SUBAREOLAR MASS
- PAIN— PROMINENT SYMPTOM
- ANGULATED TUBULES PERMEATE THE STROMA OF THE NIPPLE
- WIDE RESECTION TO PREVENT LOCAL RECURRENCE
- RADIAL SCARS
- FOCAL DENSE FIBROSIS ASSOCIATED WITH CENTRIFUGAL DISPERSION OF EPITHELIUM
- PRESENT AS—PALPABLE LUMP OR AS SPICULATED DENSITIES ON MAMMOGRAM
- STELLATE LESIONS ON MAMMOGRAMS SUGGESTING RADIAL SCARS SHOULD BE COMPLETELY EXCISED
- RADIAL SCARS ARE PREMALIGNANT



# RADIAL SCARS

- SCLEROSING PAPILLARY PROLIFERATION
- INDURATIVE MASTOPATHY
- THEY ARE OFTEN MULTIPLE

LESS THAN 1 CM IN DIAMETER..

■ GROSS – IRREGULAR GRAY WHITE ,INDURATED WITH CENTRAL RETRACTION-LIKE SCIRRHOUS CARCINOMA

MICRO- FOCAL DENSE FIBROSIS ASSOCIATED WITH CENTRIFUGAL DISPERSION OF EPITHELIUM

PRESENT AS—PALPABLE LUMP OR AS SPICULATED DENSITIES ON MAMMOGRAM

STELLATE LESIONS ON MAMMOGRAMS SUGGESTING RADIAL SCARS SHOULD BE COMPLETELY EXCISED

RADIAL SCARS ARE PREMALIGNANT



# MICROGLANDULAR ADENOSIS

- INCIDENTAL FINDING IN BREAST EXCISED FOR OTHER LESIONS
- FEMALES OLDER THAN 40 YEARS
- IT'S A --ILL DEFINED AREA OF FIRM ,RUBBERY TISSUE ,USUALLY 3 TO 4 Cm
- MICRO-POORLY CIRCUMSCRIBED HAPHAZARD PROLIFERATION OF SMALL ROUND GLANDS IN BREAST STROMA AND ADIPOSE TISSUE
- CELLS ATAIN STRONGLY FOR S100 PROTEIN
- TREATMENT– COMPLETE LOCAL EXCISION OF THE LESION AND CAREFUL FOLLOW UP

# GRANULOSA CELL TUMORS

- SIMULATE CARCINOMA
- PRESENT AS PALPABLE MASS THAT MAY BE ASSOCIATED WITH SKIN RETRACTION OR FIXATION TO SKELETAL MUSCLE OF CHEST WALL.
- GROSS— FIRM TUMOUR –GRAY WHITE – GRITTY WHEN CUT WITH A KNIFE
- MICRO— PROMINENT GRANULARITY OF CYTOPLASM
- INVARIABLY BENIGN
- WIDE LOCAL EXCISION



# MISCELLANEOUS TUMORS

- ADENOLIPOMA
- VASCULAR LESIONS
  - PERILOBULAR HEMANGIOMA
  - ANGIOMATOSSES
  - VENOUS HEMANGIOMA

Pseudoangiomatous hyperplasia of the Mammary stroma— benign stromal proliferation --stimulate vascular lesion— must be distinguished from angiosarcoma

CHONDROMATOUS LESIONS

LEIOMYOMAS



# CYSTS

## ■ NEOPLASTIC---

: BENIGN—CYSTOSARCOMA PHYLLOIDES

: MALIGNANT- INTRA CYSTIC CARCINOMA

## NON-NEOPLASTIC

: FIBROADENOSIS

: SIMPLE CYST OF BREAST

## INFLAMMATORY

ACUTE BACTERIAL MASTITIS WITH ABSCESS

## RETENTION CYST

: GALACTOCOELE

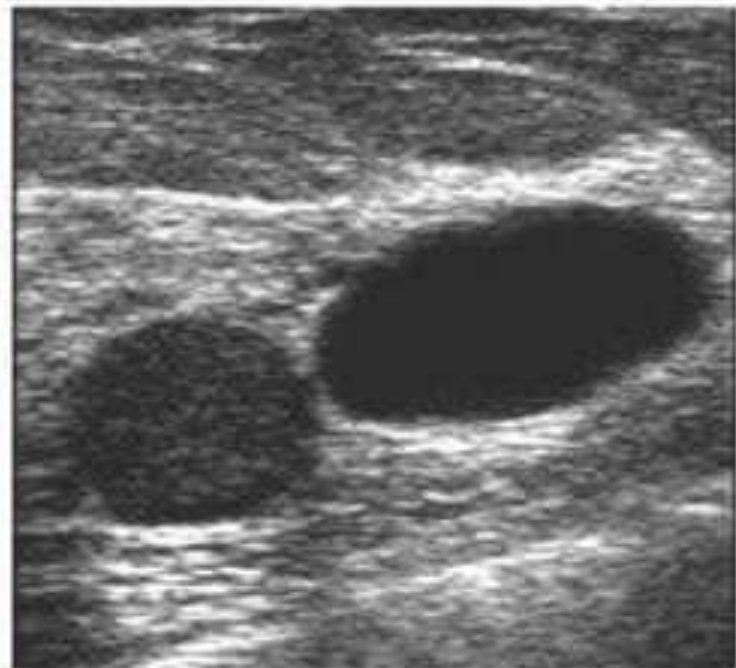
# Cysts

*Common in the West ( 70 % of women )*

- *50% are solitary cysts*
- *30% 2 - 5 cysts &*
- *rest have > 5 cysts*

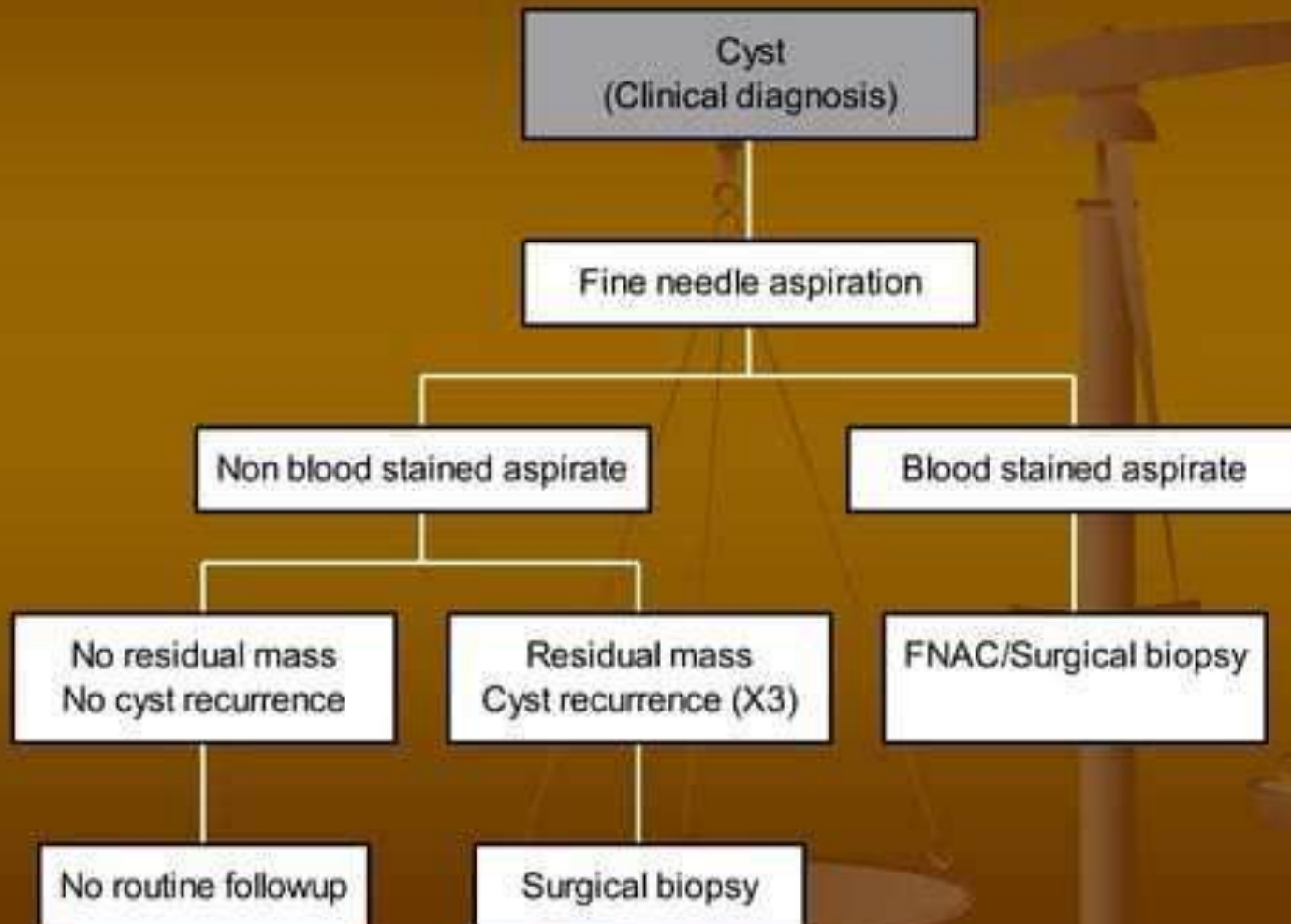
## Types

- *Apocrine cysts*  
*Lined by secretory epithelium*  
*Cyst fluid has a Na : K ratio < 3*  
*Likely to have multiple cysts*  
*Likely to develop further cysts*
- *Non apocrine cysts*  
*Cyst fluid has a Na : K ratio > 3*  
*Resembles plasma*
- *Mixture of both*



**US : Multiple cysts**

# Management algorithm for cysts





# BENIGN LESIONS OF THE BREAST

## Phyllodes Tumor

- Diagnostic problem separating it from *fibroadenoma* and it's rare variant that is malignant, *sarcoma*
- Bulk of the mass is made up of connective tissue, with mixed areas of gelatinous, edematous areas. Cystic areas are due to necrosis and infarct degenerations
- Phyllodes has greater activity and cellular component than fibroadenoma (3mitoses/hpf); while malignant component has mitotic figure.
- 80% are benign, usually large bulky lesions (*tear drop appearance*)
  - Malignant component is dependent on:
    - a. Number of mitotic figures/hpf
    - b. Vascular invasion
    - c. Lymphatic invasions
    - d. Distant metastasis
- Treatment:
  - Excision biopsy:
    - Benign – no further treatment, observe
    - Malignant – total mastectomy / MRM

# CYSTS—OTHER RARE CAUSE

- HAEMATOMA OF BREAST
  - HYDATID CYST OF BREAST
  - LYMPHATIC CYST OF BREAST
  - TUBERCULOSIS MASTITIS WITH COLD ABSCESS OF BREAST
- 



# FIBROADENOSIS

- MOST FREQUENT BENIGN DISORDER OF THE BREAST
- IT IS ABERRATION OF PHYSIOLOGICAL CHANGES THAT OCCUR IN THE BREAST FROM MENARCHE TILL MENOPAUSE
- ALSO CALLED-FIBROCYSTIC DISEASE
  - CYSTIC MASTOPATHY
  - SCHIMMELBUSCHS DISEASE
  - COOPERS DISEASE
  - RECLUS DISEASE
  - HORMONAL MASTOPATHY
  - MAZOPLASIA
- COWDEN'S DISEASE-SEVERE FIBROCYSTIC CHANGE S WITH THE FAMILIAL SYNDROME.]



# MICROSCOPIC CHANGES

- FIBROSIS
- ADENOSIS
- CYST FORMATION
- EPITHELIOSIS
- PAPILLOMATOSIS AND APOCRINE METAPLASIA



IT IS AN ESTROGEN DEPENDENT CONDITION  
BLUEDOME CYST OF BLOODGOOD

----- ONE OF THE CYST MAY GET ENLARGED TO  
BECOME CLINICALLY PALPABLE, WELL LOCALIZED  
SWELLING

SCHIMMELBUSCHS DISEASE

WHEN DIFFUSE SMALL MULTIPLE CYST ARE  
THE MAIN COMPONENTS

# CLINICAL FEATURES

FEMALES—AGED 30-40 YEARS –SPINSTERS,MARRIED CHILDLESS WOMEN ,AND THOSE WHO HAVE NOT SUCKLED THEIR BABIES.

CYCLICAL MASTALGIA– SEVERE PAIN IN THE BREAST IN PREMENSTRUAL AND DURING MENSTRUATION

CLINICALLY----- COARSE,NODULAR,TENDER LUMP WHICH IS BETTER FELT WITH THE FINGER AND THE THUMB

DISCHARGE FROM THE NIPPLE WHEN PRESENT ---SEROUS OR GREENISH

SHOTTY ENLARGEMENT OF AXILLARY LYMPH NODES CAN OCCUR



# Mastalgia

Definition : *Pain severe enough to interfere with daily life or lasting over 2 weeks of menstrual cycle*



## ***Management protocol for true mastalgia***

- ***Assess type of pain***
- ***Assess severity of pain ( Pain diary + Visual analogue scale )***
- ***Evaluation with Triple assessment***
- ***Treatment :***
  - ***Reassurance is the key to management***
  - ***Use of supportive undergarments***
  - ***Low fat, Methyl xanthine restricted diet***
  - ***Stop Oral contraceptives / HRT etc***
- ***Review patient. Successful in the majority ( 80 – 85 % ) of patients***
- ***Start drugs in those not responding to nonpharmacological treatment***
- ***Review and assess response***

# Drugs of established value in mastalgia

Drug	Dose	Clinical response	Side effects	Comments
Evening primrose oil	3 g / day	Cyclical mastalgia 44 % Non cyclical mastalgia 27%	Low ( 2% )	Efficacy as medicine questioned. Marketing authority withdrawn.
Danazol	200mg / day reduced to 100 mg on alternate days (low dose regime)	Cyclical mastalgia 70% Non cyclical mastalgia 30%	High (22%)	More effective in Cyclical mastalgia. Some side effects may be permanent.
Bromocriptine	2.5 mg twice / day (incremental dose regime)	Cyclical mastalgia 47% Non cyclical mastalgia 20%	High (45%)	Not recommended due to serious side effects
Tamoxifen	10 mg / day	Cyclical mastalgia 94% Non cyclical mastalgia 56%	High (21%)	Not licensed for use in Mastalgia. Used in Refractory mastalgia & relapse
Goserelin	3.75 mg / month intramuscular depot injection	Cyclical mastalgia 91% Non cyclical mastalgia 67%	High	Major loss of trabecular bone limits use in Refractory mastalgia & relapse



# SURGERY-INDICATION

- INTRACTABLE PAIN
- FLORID EPITHELIOSIS
- BLOOD GOOD CYST



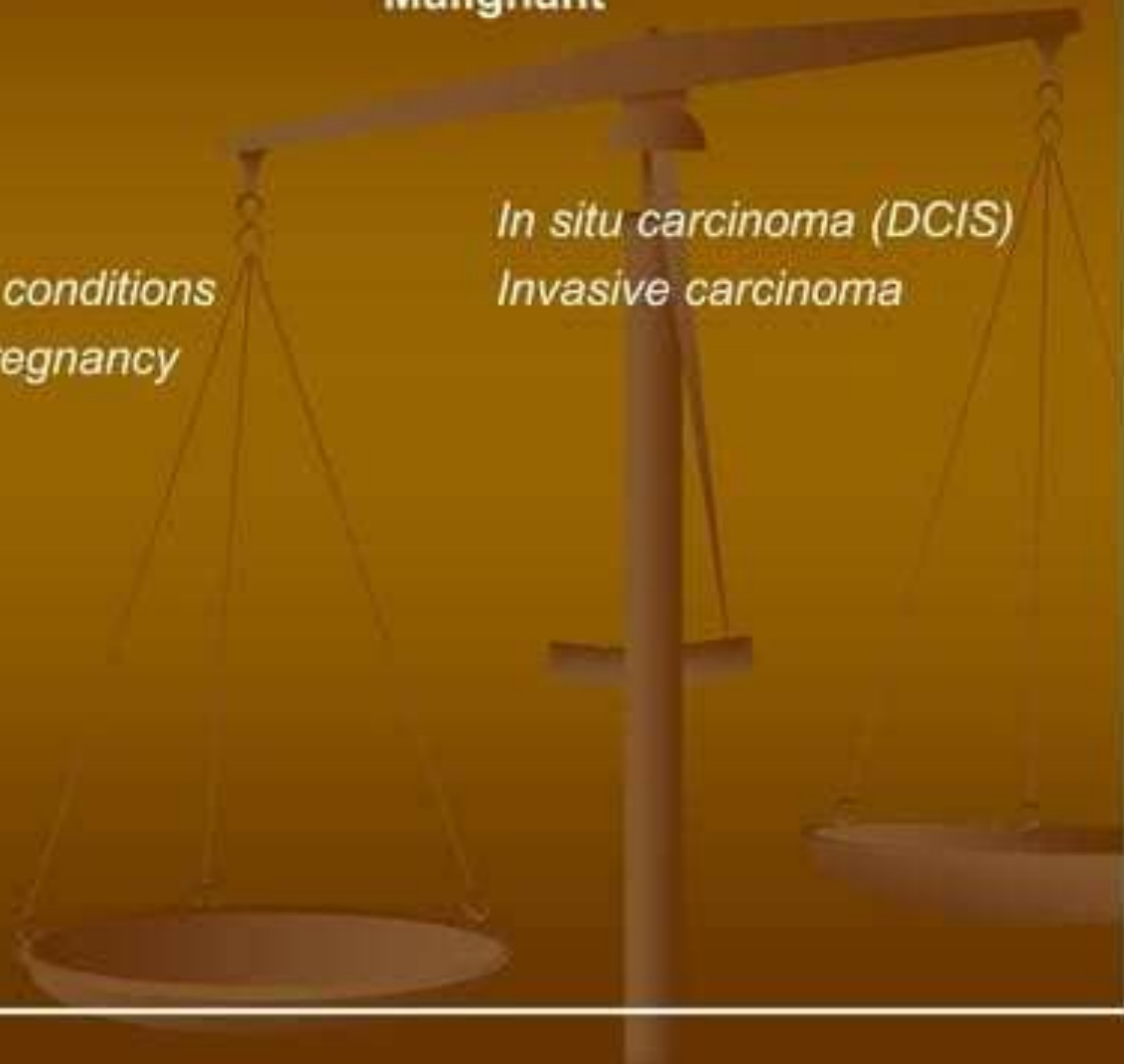
# ***Nipple discharge***

## **Benign**

*Physiological causes*  
*Intraductal papilloma and associated conditions*  
*Blood stained nipple discharge of pregnancy*  
*Galactorrhoea*  
*Periductal Mastitis*  
*Duct Ectasia*

## **Malignant**

*In situ carcinoma (DCIS)*  
*Invasive carcinoma*



# NIPPLE DISCHARGE

DISCHARGE FROM THE SINGLE DUCT

BLOOD STAIN

INTRADUCTAL  
PAPILLOMA/Ca

DUCT ECTASIA

SEROUS

FIBROCYSTIC DISEASE  
DUCT ECTASIA

CARCINOMA





# DISCHARGE > ONE DUCT

- BLOOD STAINED

- ECTASIA
- FIBROCYSTIC DISEASE
- CARCINOMA

- SEROUS

- FIBROCYSTIC DISEASE
- DUCT ECTASIA
- CARCINOMA

# DISCHARGE > 1 DUCT

GRUMOUS

- DUCT ECTASIA

- PURULENT

- INFECTION ABSCESS

- MILK

- LACTATION

- PROLACTIN

- HYPOTHYROIDISM

- PITUITARY TUMOURS



# ***Characteristics of nipple discharges***

<b>Non significant nipple discharge</b>	<b>Significant nipple discharge</b>
<b><i>Elicited</i></b>	<b><i>Spontaneous</i></b>
<b><i>Age &lt; 40 years</i></b>	<b><i>Age &gt; 60 years (new symptom)</i></b>
<b><i>Bilateral</i></b>	<b><i>Unilateral</i></b>
<b><i>Intermittent</i></b>	<b><i>Persistent</i></b>
<b><i>Thick</i></b>	<b><i>Watery</i></b>
<b><i>Non troublesome</i></b>	<b><i>Troublesome</i></b>
<b><i>Multiductal</i></b>	<b><i>Uniductal</i></b>
<b><i>Negative test for blood (reagent stick test for blood)</i></b>	<b><i>Positive test for blood</i></b>



# Nipple Discharge

- Pathologic
  - Unilateral
  - Spontaneous
  - Heme (+)
    - ┌ Most common cause intraductal papilloma



# Galactorrhoea

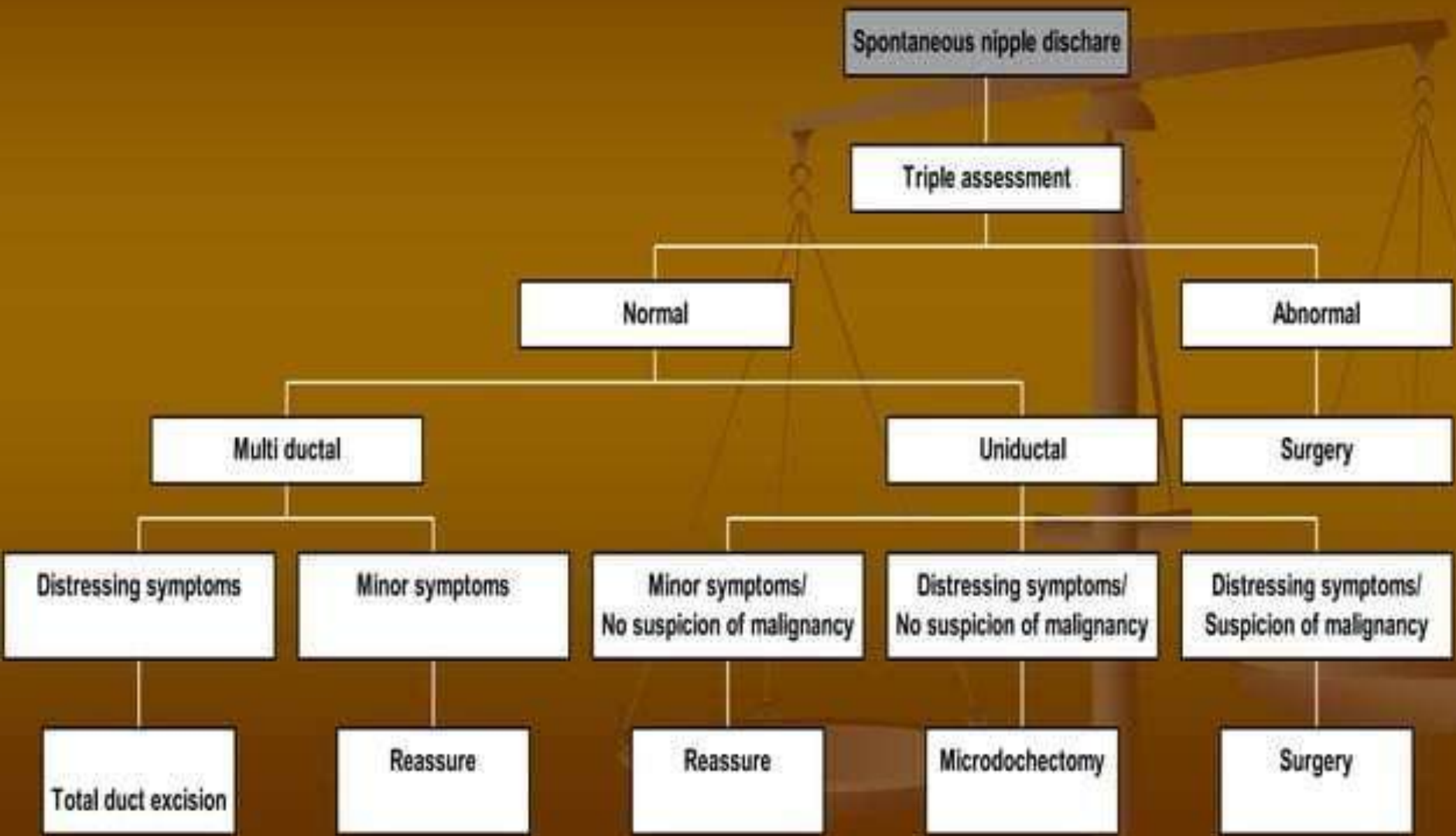
## Causes of galactorrhoea

Physiological causes	Drugs	Pathological causes
<i>Extremes of age</i>	<i>Oestrogen therapy</i>	<i>Hypothalamic lesions</i>
<i>Stress</i>	<i>Anaesthesia</i>	<i>Pituitary tumors</i>
<i>Mechanical stimulation</i>	<i>Dopamine receptor blocking agents</i>	<i>Reflex causes : Chest wall injury, Herpes zoster neuritis, Upper abdominal surgery</i>
	<i>Dopamine re-uptake blockers</i>	<i>Hypothyroidism</i>
	<i>Dopamine depleting agents</i>	<i>Renal failure</i>
	<i>Inhibitors of Dopamine turnover</i>	<i>Ectopic production : Bronchogenic and renal carcinoma</i>
	<i>Stimulation of serotonergic system</i>	
	<i>Histamine H2-receptor antagonists</i>	

## Management :

- *Estimate PRL levels. If very high, evaluate for pituitary lesion*
- *Physiological - Reassurance, cessation of stimulation*
- *Drug induced - Stop or change drug if possible*
- *Pathological - Cabergoline / Bromocriptine, treat cause if possible ( E.G. Pituitary surgery)*

# Management of spontaneous nipple discharge





# PLASMA CELL MASTITIS

BENIGN LESION--- USUALLY SINGLE

- PRIMARY DILATATION IN ONE OR MORE OF THE LACTIFEROUS DUCT




FILL WILL STAGNANT BROWN OR GREEN SECRETION



IRRITANT  
PERIDUCTAL MASTITIS  
ABSCCESS/FISTULA FORMATION



- 
- CHRONIC INDURATED MASS FORMS—  
MIMICS AS CARCINOMA
  - FIBROSIS – SLIT LIKE NIPPLE  
RETRACTION
  - TREATMENT
    - RULE OUT CARCINOMA
    - ANTIBIOTIC THERAPY
    - HADFIELDS OPERATION

# DUCT PAPILLOMA

BENIGN LESION—SINGLE AND UNILATERAL

MIDDLE AGED WOMEN— PRESENT WITH BLEEDING PER NIPPLE

TUMOUR SITUATED IN ONE OF THE LARGE LACTIFEROUS DUCTS

PRESENT AS— SMALL SWELLING JUST BENEATH THE AREOLA  
PALPATION— DISCHARGE OF BLOOD

AS IT IS A PREMALIGNANT LESION—TREATED BY----  
MICRODOEHECTOMY



# INFECTIONS AND ABSCESS

## ■ INCLUSION CYSTS

OCCUR IN THE SKIN OF THE BREAST  
BECOME INFECTED WITH ABSCESS FORMATION

IDENTIFIED AS



- DISCRETE ,SUBCUTANEOUS MASSES ATTACHED TO THE DERMIS
- MARKED BY AN OVERLYING PORE
- KERATINACEOUS MATERIAL CAN BE EXPRESSED FROM THE PORE

- WHEN INFECTION SUPERVENES—  
RESPONSIBLE ORGANISM



STAPHYLOCOCCUS AUREUS

CYSTS BECOMES---

TENDER/WARM/SWOLLEN/RED

WHEN PUS IS PRESENT--- INCISION AND  
DRAINAGE INDICATED

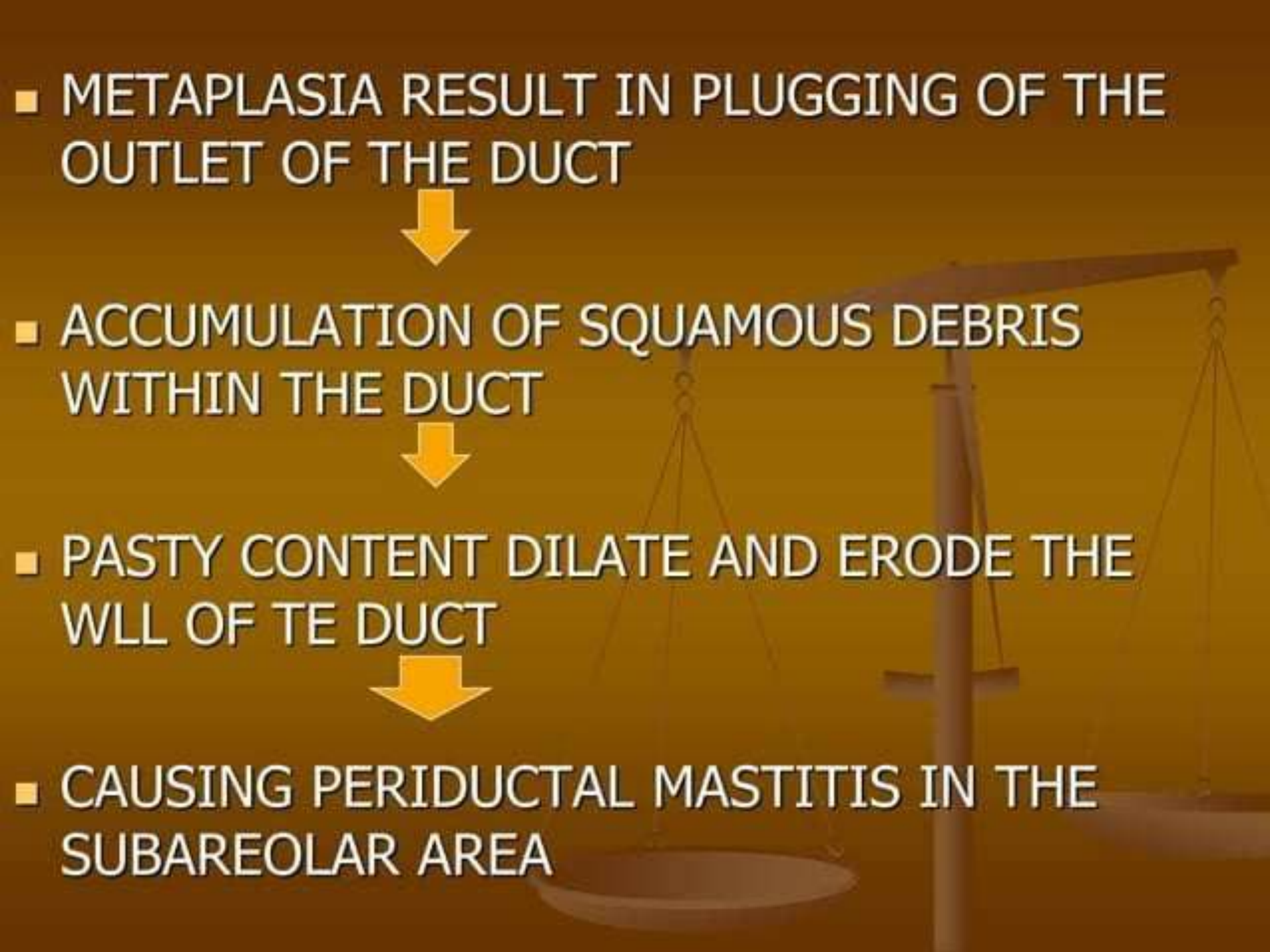
PASTY CONTENTS ARE EVACUATED




## RECURRING SUBAREOLAR ABSCESS(ZUZKA'S DISEASE)

- BACTERIAL INFECTION OF THE BREAST
  - C/F--- SUBAREOLAR IN LOCATION
  - NOT ASSOCIATED WITH LACTATION
  - AFFECTS PREMENOPAUSAL WOMEN
  - CIGARETTE SMOKING
- 
- ZUSKA'S DISEASE CAUSED BY SQUAMOUS METAPLASIA OF ONE OR MORE MAMMARY DUCTS IN THEIR PASSAGE THROUGH THE NIPPLE




- METAPLASIA RESULT IN PLUGGING OF THE OUTLET OF THE DUCT
  - ACCUMULATION OF SQUAMOUS DEBRIS WITHIN THE DUCT
  - PASTY CONTENT DILATE AND ERODE THE WALL OF THE DUCT
  - CAUSING PERIDUCTAL MASTITIS IN THE SUBAREOLAR AREA
- 

- REMOVING OF THE NIPPLE AND INVOLVED UNDERLYING DUCTS –GIVES THE PERMANENT CURE
  - MASTECTOMY IS RARELY NECESSARY
  - NIPPLE RECONSTRUCTION---AFTER HEALING IS SECURED
- 



# PUERPERAL MASTITIS

- ASSOCIATED WITH BREAST FEEDING – DEVELOPS IN ABOUT 2.5% OF NURSING MOTHERS
  - C/F-REDNESS; SWELLING; TENDERNESS; CHILLS AND FEVER
  - ORG-STAPH AUREUS.
  - TOXIC SHOCK SYNDROME HAS RESULTED FROM POST PARTUM STAPHYLOCOCCUS MASTITIS
  - RX-WARM COMPRESSORS; GENTLE EXPRESSION OF MILK; APPROPRIATE ANTIBIOTICS
- 



# Mastitis

- Treatment
  - Abx
  - Continue to breast feed
  - Close follow-up



# Infections

## 1. Lactational infections

- *Diminishing incidence*
- *Usually caused by S.aureus*
- *Clinical features : pain, redness, swelling, tenderness & systemic symptoms*

### Treatment :

- *Antibiotics (E.G. Flucloxacillin, Co amoxyclav etc) before pus formation*
- *Abscess : Repeated aspiration / mini incision with topical anaesthetic cream ( I& D under GA occasionally)*
- *May continue to breast feed*



**Aspiration Lactational abscess**  
(creamy yellow pus)



**Aspiration galactocoele**  
(white milk)



**I & D abscess**

# Infections

## 2. NonLactational infections : **Central**

- Usually due to Periductal mastitis
- Affects younger women. Often smokers in the West
- May present as : inflammation +/- mass, abscess, mammary duct fistula
- Aerobic + anaerobic organisms may be involved

### Treatment :

- Antibiotics (E.G. Co amoxyclav etc) before pus formation
- Abscess : Repeated aspiration / mini incision with topical anaesthetic cream ( I& D under GA occasionally)
- MDF : Excision fistula + Total duct excision



**Periductal mastitis :  
Inflammation**



**Abscess**



**Mammary duct fistula**



# Granulomatous mastitis

- HAS NUMEROUS ORIGINS

- 1. SARCOIDOSIS

- ALL PRESENT AS MASS

- NONCASEATING GRANULOMA LOCATED BETWEEN AND WITHIN LOBULES

- ALSO BE SEEN IN INTRAMAMMARY LYMPHNODE—SUSPICIOUS MICROCALCIFICATION ON MAMMOGRAM

- EPITHELOID GRANULOMAS AND GIANT CELLS WITH NO CENTRAL NECROSIS

# GRANULOMATOUS MASTITIS

## ■ 2. PARASITES

*Dirofilaria repens*/*Dirofilaria tenuis*

## 3. FUNGAL INFECTIONS

*Nocardia asteroides* – chronic abscess

tissues show—epithelial hyperplasia

fibrosis, ac/chr inflammation

foreign body reaction

ANTIFUNGAL THERAPY EFFECTIVE



# GRANULOMATOUS MASTITIS

## ■ 4. TUBERCULOSIS

PRESENT AS MASS/ABSCESS

GRANULOMAS/CASEATION –SEEN

GROWTH IN CULTURE—CONFIRMS

ANTI TUBERCULOUS THERAPY-EFFECTIVE

In Rx FAILURE—EXTENSIVE PAINFUL

ULCERATION— MASTECTOMY

## 5. PARAFFIN

INJECTED FOR BREAST AUGMENTATION

RESULT IN HARD MASSES /CHRONIC DRAININ

SINUSES



# SILICONE GRANULOMA

- IMPORTANT MATERIAL FOR BREAST AUGMENTATION
  - GEL MIMICS THE CONSISTENCY OF BREAST TISSUE
  - GEL CAUSES INTENSE GRANULOMATOUS REACTION
  - RUPTURE—INTRACAPSULAR/EXTRACAPSULAR
  - DIAGNOSED BY—MAMMOGRAM/USG/MRI-SENSITIVE
  - FREE SILICONE GEL—DISPERSES IN BREAST TISSUE
  - MIGRATES TO LYMPHNODES—FIRM ADENOPATHY
- 
- Rx— SURGICAL REMOVAL OF INVOLVED TISSUE
  - EXTENSIVE CHANGES—TOTAL MASTECTOMY  
AND RECONSTRUCTION



# BARBERS BREAST

- Roustabouts breast
- PENETRATION OF HAIRS INTO THE SKIN OF THE BREAST WITH FORMATION OF CHRONIC SINUSES
- PROBLEM SIMILAR TO INTERDIGITAL PILONIDAL SINUSES THAT AFFECT BARBERS
- REPORTED TO INVOLVE PERIAREOLAR AREAS OF HAR DRESSERS
- Rx– EXTRACTION OF PENETRAING HAIRS WITH FORCEPS AND PREVENTION WITH PROTECTIVE CLOTHING.

# GYNECOMASTIA

- ENLARGEMENT OF MALE BREAST DUE TO GROWTH OF DUCTAL TISSUE AND STROMA
  - BASIC MECHANISM— EXCESS OF ESTROGEN
  - CAUSES— PHYSIOLOGICAL/PATHOLOGICAL
  - PHYSIOLOGICAL
1. IN NEWBORN--- DUE TO MATERNAL/PLACENTAL ESTROGEN
  2. ADOLESCENT --- MEDIAN AGE— 14 yrs/ BILATERAL PLASMA ESTRADIOL LEVEL REACHES ADULT RANGE BEFORE PLASMA TESTOSTERONE REGRESSES SPONTANEOUSLY IN 3 yrs
  3. AGING--- DECLINING TESTICULAR FUNCTION INCREASING FATTY TISSUE



# PATHOLOGICAL GYNECOMASTIA

- RELATIVE ESTROGEN EXCESS
- ABSOLUTE ESTROGEN EXCESS
- DRUGS
- IDIOPATHIC



RELATIVE ESTROGEN EXCESS

CONGENITAL DEFECTS

ANORCHIA

KLINEFELTERS SYNDROME

ANDROGEN RESISTANCE-

Testicular feminization syn

Reinfensteins syn

SECONDARY TESTICULAR FAILURE

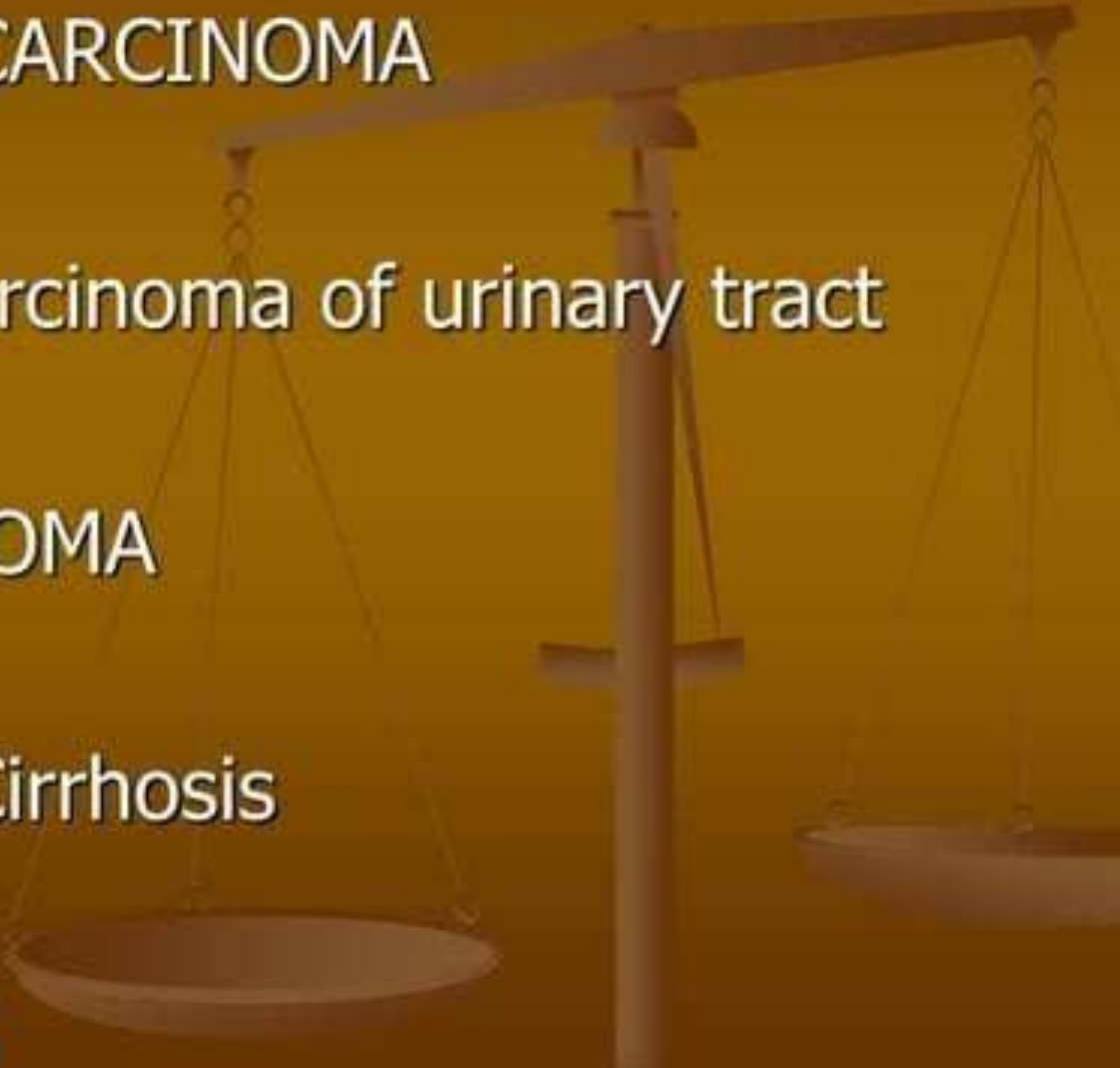
VIRAL ORCHITIS

TRAUMA/CASTRATION/LEPROSY

TESTICULAR ATROPHY

RENAL FAILURE

## INCREASED ESTROGEN PRODUCTION

- TESTICULAR TUMORS-STROMAL CELL Tmrs
  - BRONCHOGENIC CARCINOMA
  - Transitional cell carcinoma of urinary tract
  - ADRENAL CARCINOMA
  - LIVER DISEASE– Cirrhosis
  - THYROTOXICOSIS
- 



# DRUGS

- Diethylstilbestrol
- DIGITALIS
- CLOMIPHEN
- KETOCONAZOLE
- CIMETIDINE
- SPIRINOLACTONE
- CALCIUM CHANNEL BLOCKERS
- CAPTOPRIL
- BUSULFAN/ISONIAZID
- METHYLDOPA



# INDICATIONS FOR OPERATION

- FOR DIAGNOSIS
- FOR COSMETIC IMPROVEMENT



# PROLIFERATIVE STROMAL LESION

## ■ 1. DIABETIC MASTOPATHY

PT. LONG STANDING type 1 and type 2 DM

CONNECTIVE TISSUE OVER GROWTH

B LYMPHOCYTE INFILTRATION

LOBULAR ATROPHY

C/f-- PALPABLE DISCRETE MASSES

DIFFUSE NODULARITY IN SUBAREOLAR AREA

DIAGNOSIS- CORE NEEDLE BIOPSY



## PSEUDOANGIOMATOUS HYPERPLASIA

- FOCAL PROLIFERATION OF FIBROUS STROMA CONTAINING NARROW EMPTY SPACES— SUGGESTING OF VASCULAR NEOPLASM

PRESENT AS— DENSE ,DISCRETE RUBBERY MASS MIMICKING FIBROADENOMA

MAMMOGRAM— SHOW MASSLIKE DENSITY

Rx— EXCISION WITH WIDE MARGINS NECESSARY FOR SECURE TREATMENT



# BREAST NECROSIS

## ■ COUMARIN NECROSIS

COMPLICATION OF ANTICOAGULANT THERAPY

HAEMORRHAGIC NECROSIS OF SKIN /SOFT TISSUE

ENTIRE BREAST MAY BE LOST/BILATERAL INVOLV.

Rx—discontinuation of COUMARIN AND VIT.K admn

## BREAST NECROSIS WITH CALCIPHYLAXIS

ASSOCIATED WITH END STAGE RENAL DISEASE

WITH SECONDARY HYPERPARATHYROIDISM

PTs— HAEMODIALYSIS DEPENDENT/DIABETIC

INVOLEMENT OF PARENCHYMA OF BREAST

Rx— PARATHYROIDECTOMY /DEBRIDEMENT OF  
NECROTIC TISSUE

# FAT NECROSIS

- FOLLOWING--- BLUNT INJURY  
VIGOROUS EXERCISE  
BIOPSY/BREAST REDUCTION  
SEAT BELT INJURY  
TRAM FLAP

C/F-- PRESENT AS PALPABLE MASS  
SKIN OR NIPPLE RETRACTION  
DEVELOPMENT OF TENDER  
SUBCUTANEOUS NODULES

MAMMOGRAPHY- SPICULATED MASS

ROD LIKE-BRANCHING MICROCALCIFICATION



■ PROGRESSIVE FOCAL LIPONECROSIS INVOLVE THE BREAST


■ WEBER CHRISTIAN DISEASE

CHRONIC RELAPSING FEBRILE NODULAR  
NONSUPPURATIVE PANNICULITIS

BIOPSIES—  
INFLAMMATION, NECROSIS, FIBROSIS

Rx— corticosteroids  
immunosuppresives  
NSAID  
ANTI MALARIAL

# MONDORS DISEASE

- THROMBOPHLEBITIS OF THE THORACOEPIGASTRIC VEIN
- THIS VEIN WHICH CROSSES BREAST IN ITS COURSE FROM THE AXILLA TO THE EPIGASTRIUM
-  PRESENT AS
- MILD TENDERNESS
- DEV.of FIRM SUBCUTANEOUS CORD
- THE CORD PRODUCES A GROOVE ON THE BREAST OR a BOWSTRING ACROSS THE AXILLA
- BIOPSY— IF DIAGNOSIS UNCERTAIN/CANCER SUSPECTED
- Rx—LOCAL HEAT/NSAID



# CONDITIONS WITH PREGNANCY

## ■ INFARCTION OF THE BREAST

RELATIVE VASCULAR INSUFFICIENCY—INC. METABOLIC DEMAND

PRESENT AS PALPABLE MASS LATE IN PREGNANCY

MULTIPLE AND BILATEAL MASSES

GROSSLY—FIRM, DISCRETE NODULE

HISTOLOGICALLY— COAGULATIVE NECROSIS

MAMMOGRAMS—CIRCUMSCRIBED DENSITY

BIOPSY— FOR DIAGNOSIS OF INFARCTION

Rx— EXCISION

DURING LACTATION—FOLLOWED BY TEMPORARY MILK  
FISTULA





## ***5. Cosmetic problems***

### **1. Common cosmetic problems**

- *Small /large volume breasts*
- *Ptosis*
- *Asymmetry of breast size, shape.*

#### **Treatment :**

*Augmentation / Reduction mammoplasty*

### **2. Uncommon cosmetic problems**

- *Congenital &*
- *Acquired disturbances of breast development & growth*



**Large volume breasts with ptosis**



**Small volume breasts**



**Asymmetry of breast with ptosis**

# Diagnostic Modalities in Breast Diseases






# Diagnosing Breast Pathology

- Triple Assessment maximises sensitivity of diagnosis
  - Clinical - history and examination 50-85%
  - Radiology – MMG +/- USS 90%
  - Pathology – FNA or core biopsy 91%
  - Sensitivity of triple assessment 99.6% and specificity 93%
  - Triple Assessment is positive if any of above is positive but negative when all three negative

# Aims of Triple Assessment

- Maximise diagnostic accuracy in breast cancer
  - Maximise preoperative diagnosis in breast cancer
  - Minimise excisional biopsies for diagnosis
  - Minimise proportion of benign excision biopsies for diagnosis
- 

# Clinical - Examination

- Both breasts
  - Inspection -
    - sitting, arms above head, on hips tensing pectoralis
    - size, asymmetry, skin dimpling, nipple retraction, inversion, or excoriation (Paget's), visible lumps or ulceration, peau d'orange
  - Palpation - sitting and supine
    - Features of breast cancer: solitary, hard, irregular, immobile and nontender
  - Lymph node evaluation
    - axillary, supraclavicular
  - General examination including abdomen
- 



# EVALUATION

## A. Radiological Examination:

- A positive result is only suggestive of carcinoma

### 1. Mammography (Screening):

- Uses low dose of radiation (0.1 rad), not proven to escalate breast CA
- Complementary study, can not replace biopsy
- **(+) fine stippling of calcium** – suggestive of CA
- **Early detection of an occult CA** before reaching 5 mm.
  1. Indeterminate mass that presents as a solitary lesion suspicious of a neoplasm
  2. Indeterminate mass that can not be considered a dominant nodule, especially when multiple cyst are present
  3. Large, fatty breast that no nodules were palpated
  4. Follow up of contra lateral breast after mastectomy
  5. Follow up examination of breast CA treated with segmental mastectomy and irradiation
- Recommended Program of Using Mammography:
  1. Daily breast examination after 20y/o
  2. Baseline mammography 35-40y/o
  3. Annual mammography > 40 y/o

# Mammography

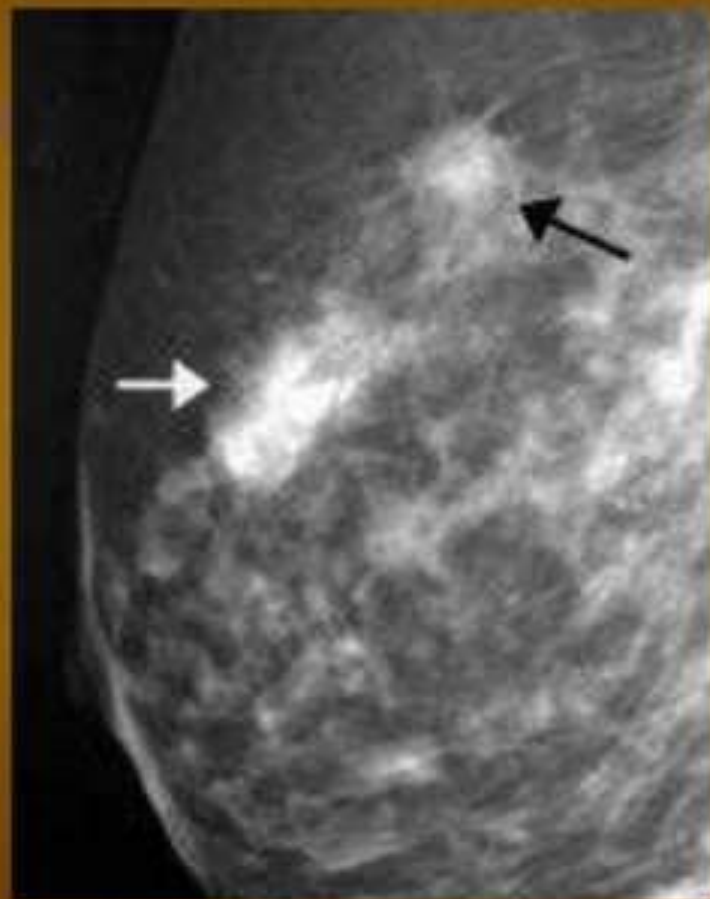
- Screening tool
  - Age of 40
- Estimated reduction in mortality 15-25%
- 10% false positive rate
- Densities & calcifications





# Imaging - MMG

- MLO and CC views +/- lateral views, coned or magnified views
- Cardinal features of malignancy
  - Mass – spiculated, irregular margins
  - Architectural distortion
  - Microcalcification with casting or irregularity
    - Clustered polymorphic calcification most common finding
  - Asymmetry
- Sens 63-95% (95% in palpable lesions)
- Spec 14-90%





# Calcification



- **Macrocalcifications**
  - Large white dots
  - Almost always noncancerous and require no further follow-up.
- **Microcalcifications**
  - Very fine white specks
  - Usually noncancerous but can sometimes be a sign of cancer.
  - Size, shape and pattern

Noncancerous (benign)  
calcifications



Cancerous (malignant)  
calcifications



# BI-RADS

BI-RADS Classification	Features
0	Need additional imaging
1	Negative – routine in 1 yr
2	Benign finding – routine in 1 yr
3	Probably benign, 6mo follow-up
4	Suspicious abnormality, biopsy



# Imaging - Ultrasound

- Characterise mammographic abnormality
- Reliable assessment of tumour size
- Particularly useful in dense breasts
  - First line for a palpable lesion in young pts
- Differentiate solid from cystic
- Features of malignant lesions
  - Angular and poorly defined margins
  - Spiculation
  - Shadowing
  - Branch pattern
  - Duct extension
  - Microlobulation
  - Height greater than width
  - Hypoechoic
  - Calcification
- Sens 68-97% Spec 74-94%



# Ultrasound

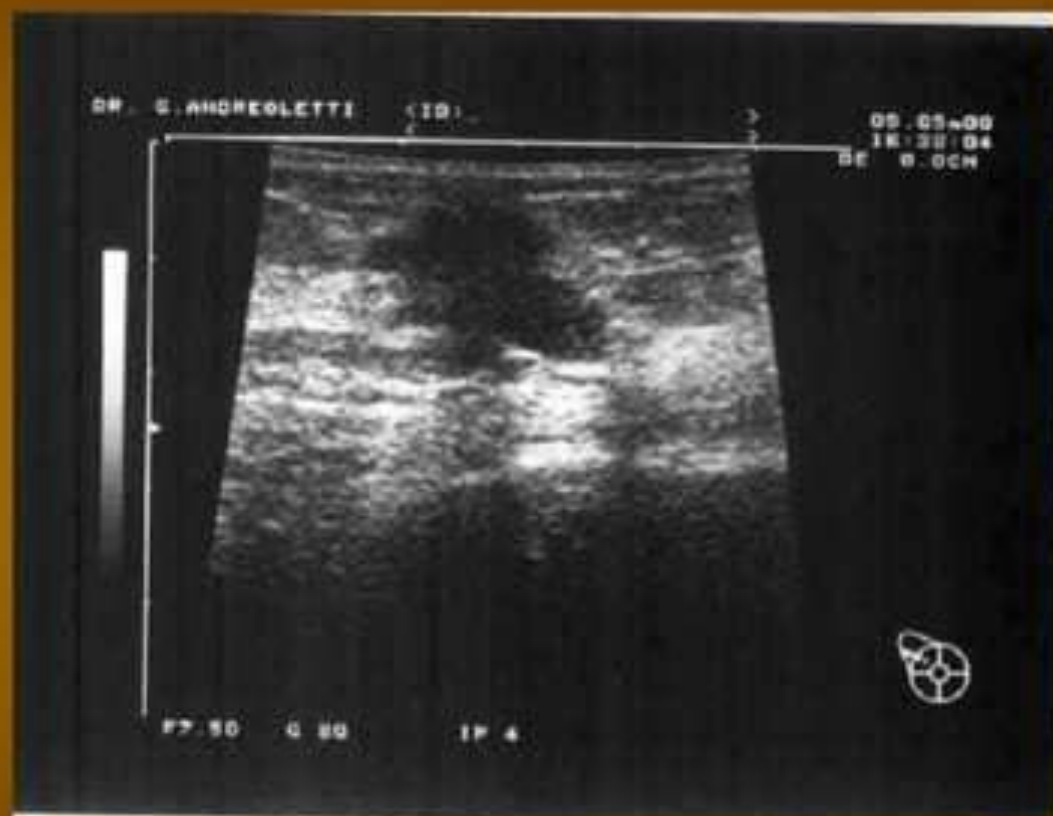
## ■ Benign

- Pure and intensely hyperechoic
- Elliptical shape (wider than tall)
- Lobulated
- Complete thin capsule

## ■ Malignant

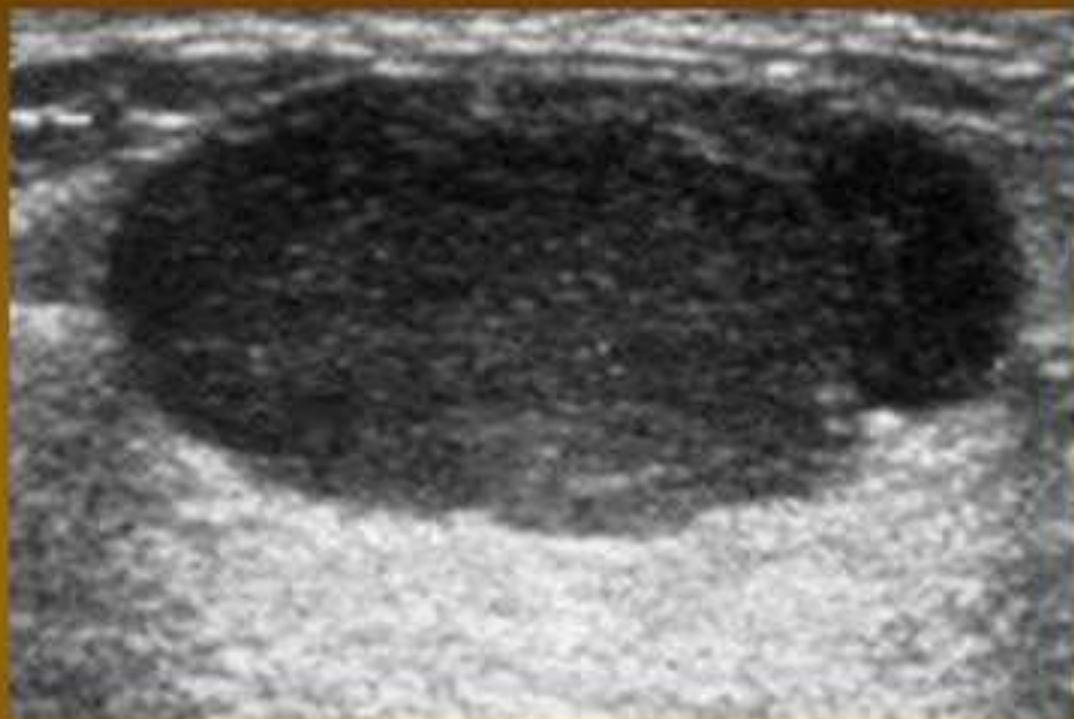
- Hypoechoic, spiculated
- Taller than wide
- Duct extension
- microlobulation



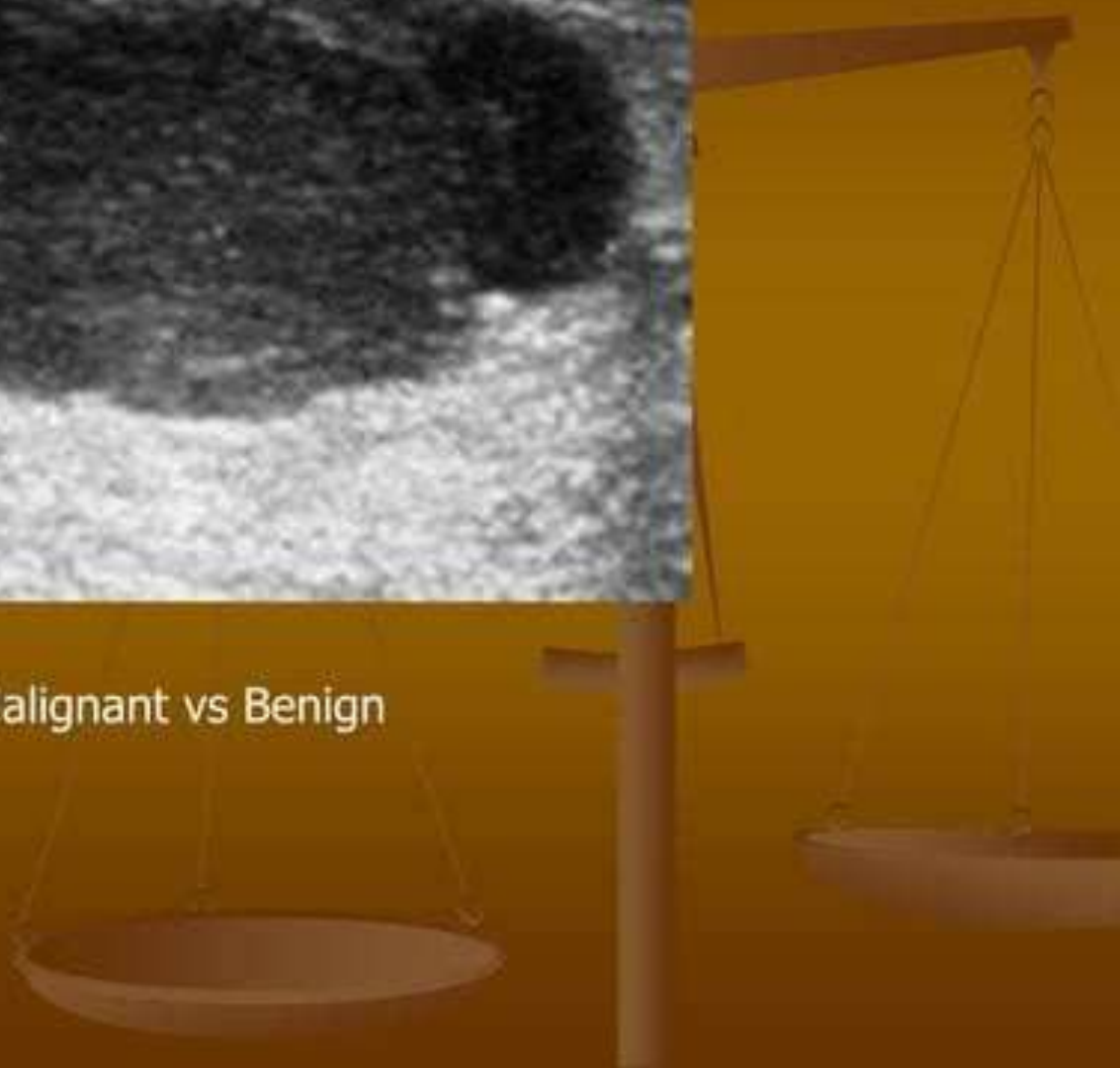


Malignant or Benign





Malignant vs Benign



# Imaging - MRI

- Sens 88-99% Spec 67-94%
- Specific advantages
  - May detect lobular ca where other radiology is benign
  - Sensitive for multifocal disease
  - Investigation of pts with implants
- However
  - 10 times more expensive than MMG
  - Limited availability
  - High false positive rate
  - Does not reduce need for biopsy
  - Less sensitive for DCIS



# MRI



Pre Gad



Post Gad



Color Overlay



# Nuclear Medicine

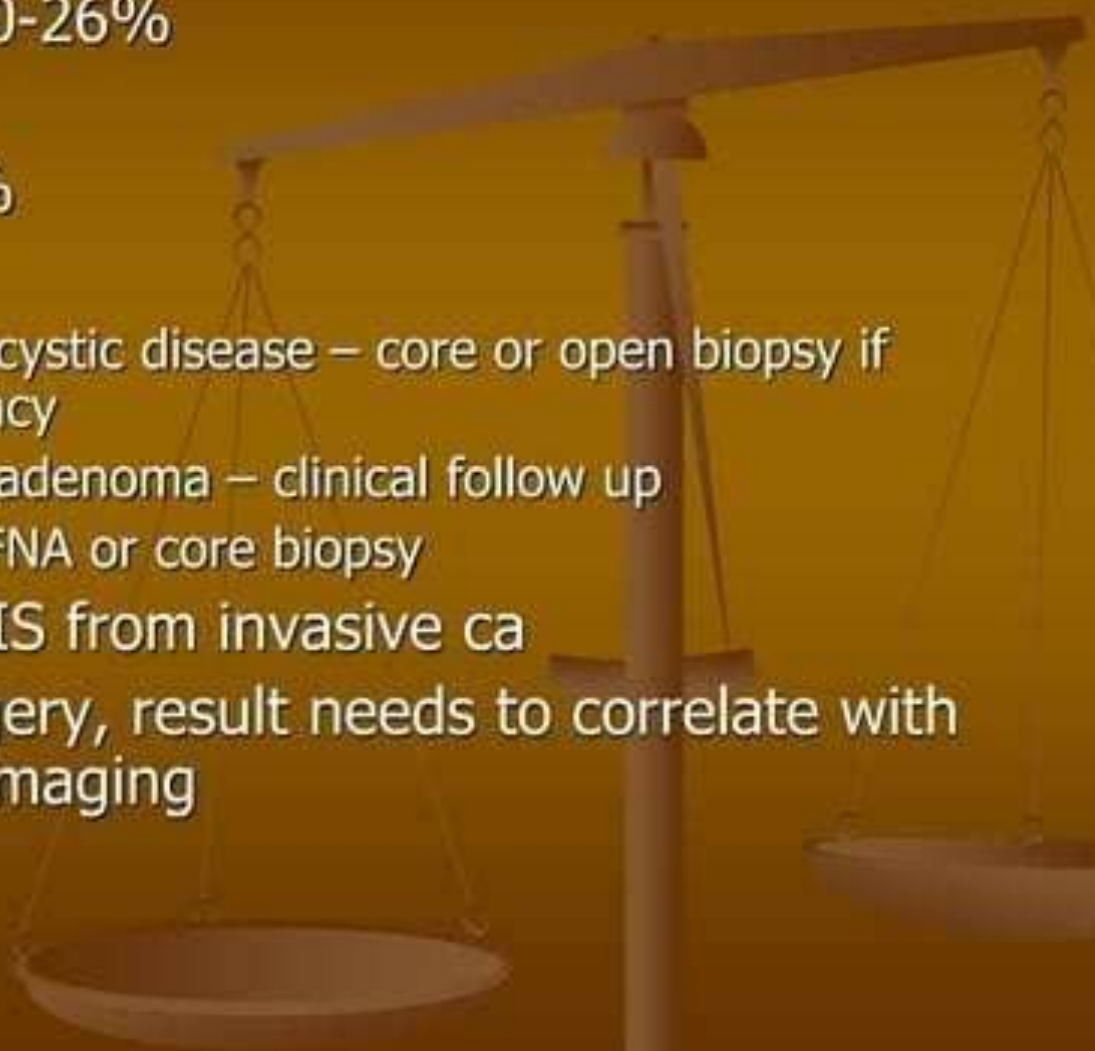
- New isotopes hold promise such as FDG, sestamibi, and C-11 thymidine
- Imaging with resolution is problematic
  - must detect routinely @  $< 10\text{mm}$
- More costly than MRI
- *New Contact and PET detectors increasing accuracy dramatically and ? Cheaper than MRI at finding MF disease*

# Pathology - Fine Needle Aspiration

- Cytological diagnosis
    - Can determine hormone receptor status
  - Indications
    - ┌ Palpable lesions – done in clinic
    - ┌ Cystic lesions
    - ┌ Core biopsy not available
    - ┌ Impalpable lesions via USS or MMG localisation
  - Easy technique
  - Requires cytopathologist for evaluation – preferably on site to ensure specimen adequate
  - Results within few hours
- 

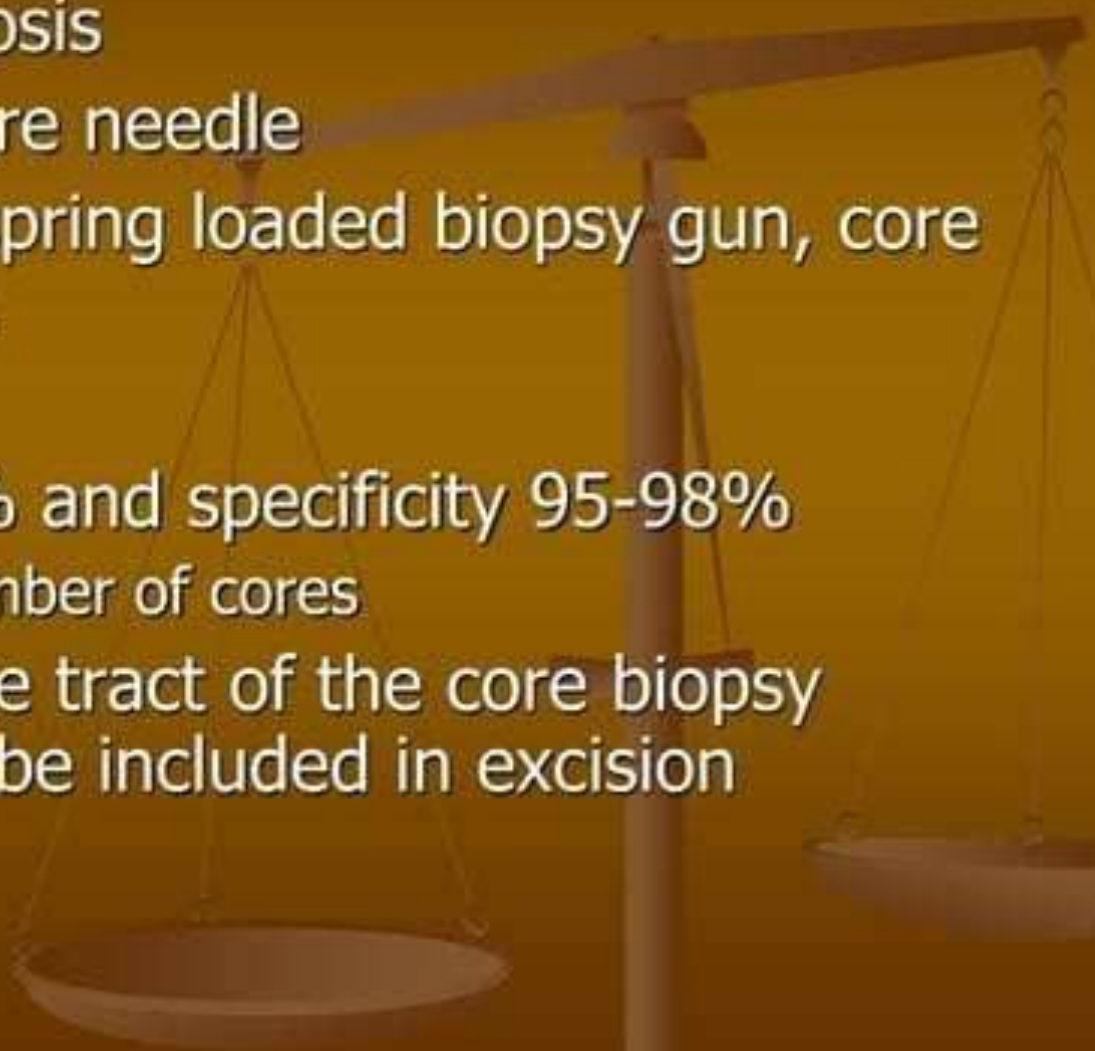


# FNA Results

- Insufficient cells in 10-26%
  - False positive 1-2%
  - False negative 5-14%
  - Findings
    - Normal tissue or fibrocystic disease – core or open biopsy if concerns for malignancy
    - Benign lesion eg fibroadenoma – clinical follow up
    - Non diagnostic – rpt FNA or core biopsy
  - Won't distinguish DCIS from invasive ca
  - Before definitive surgery, result needs to correlate with clinical findings and imaging
- 

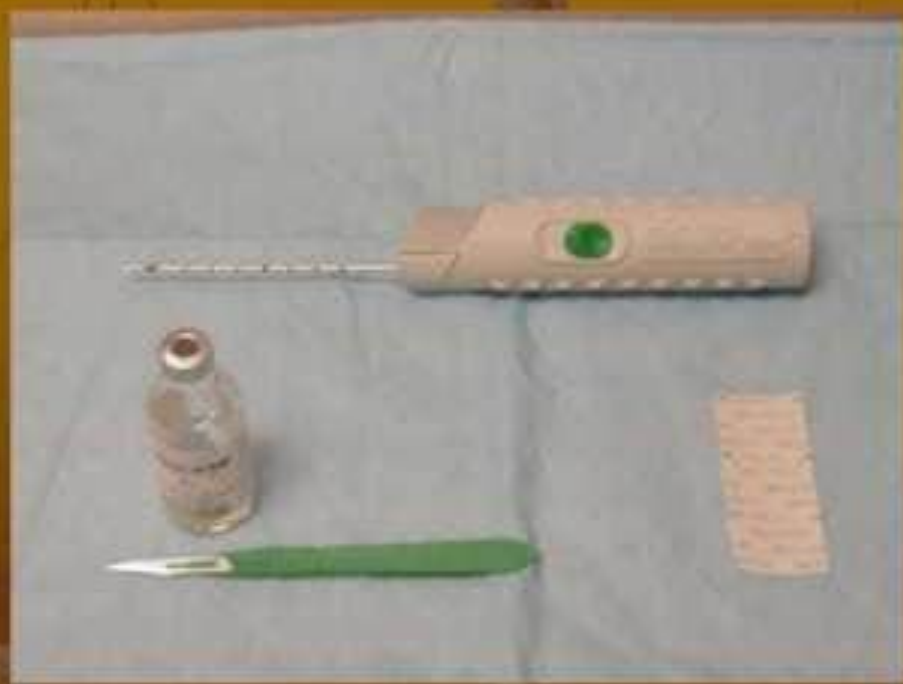


# Pathology – Core Biopsy

- Histological diagnosis
  - Tru cut – large bore needle
  - 14G needle on a spring loaded biopsy gun, core samples under LA
  - Obtain 4-6 cores
  - Sensitivity 90-95% and specificity 95-98%
    - Depending on number of cores
  - Where possible the tract of the core biopsy should be able to be included in excision
- 

# Core Needle Biopsy

- 14-18 gauge spring loaded needle
- Tissue
- Multiple



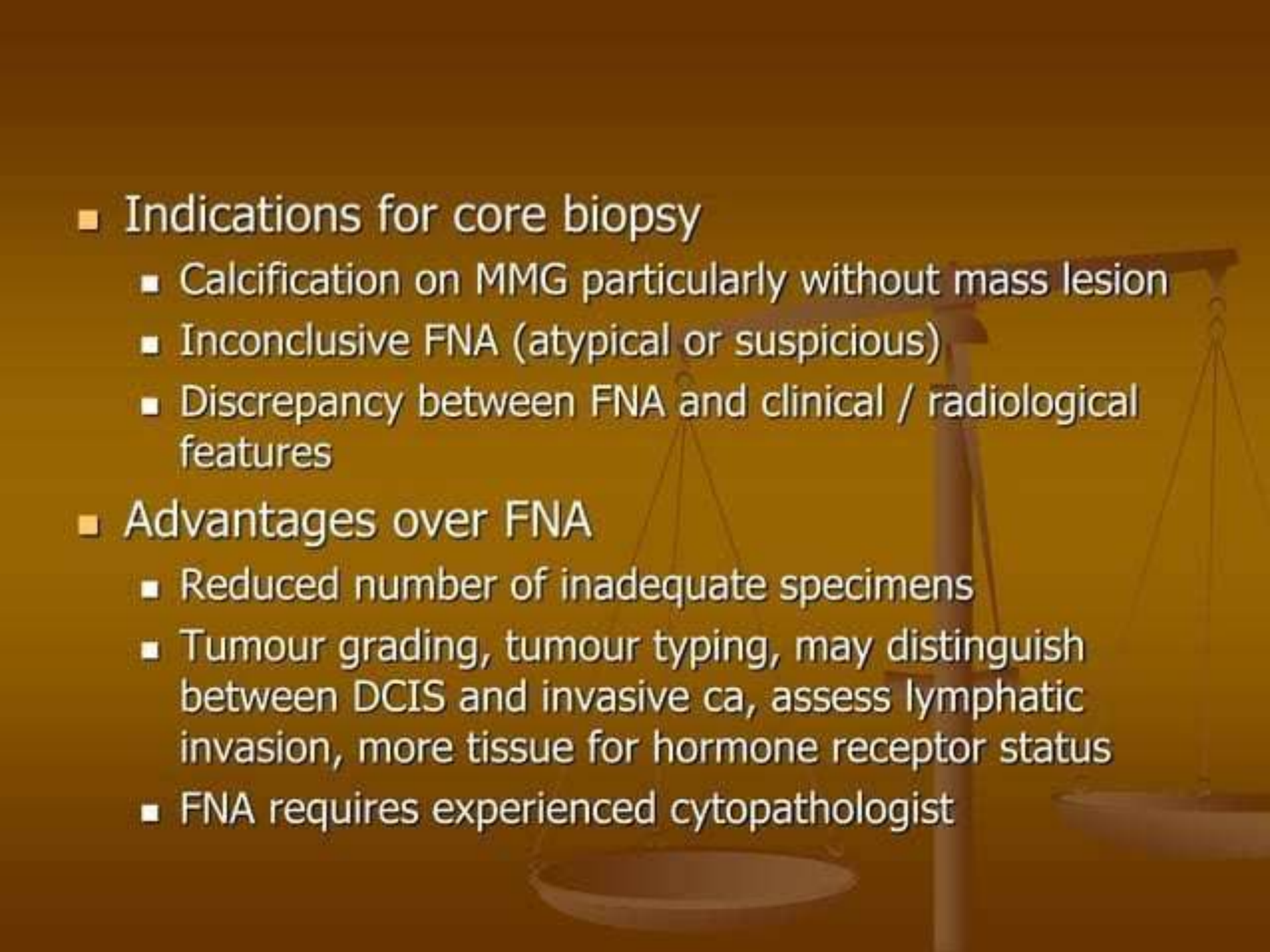




# Large Core Biopsy

- 6-14 gauge core
- Large samples
- Single insertion



- 
- Indications for core biopsy
    - Calcification on MMG particularly without mass lesion
    - Inconclusive FNA (atypical or suspicious)
    - Discrepancy between FNA and clinical / radiological features
  - Advantages over FNA
    - Reduced number of inadequate specimens
    - Tumour grading, tumour typing, may distinguish between DCIS and invasive ca, assess lymphatic invasion, more tissue for hormone receptor status
    - FNA requires experienced cytopathologist

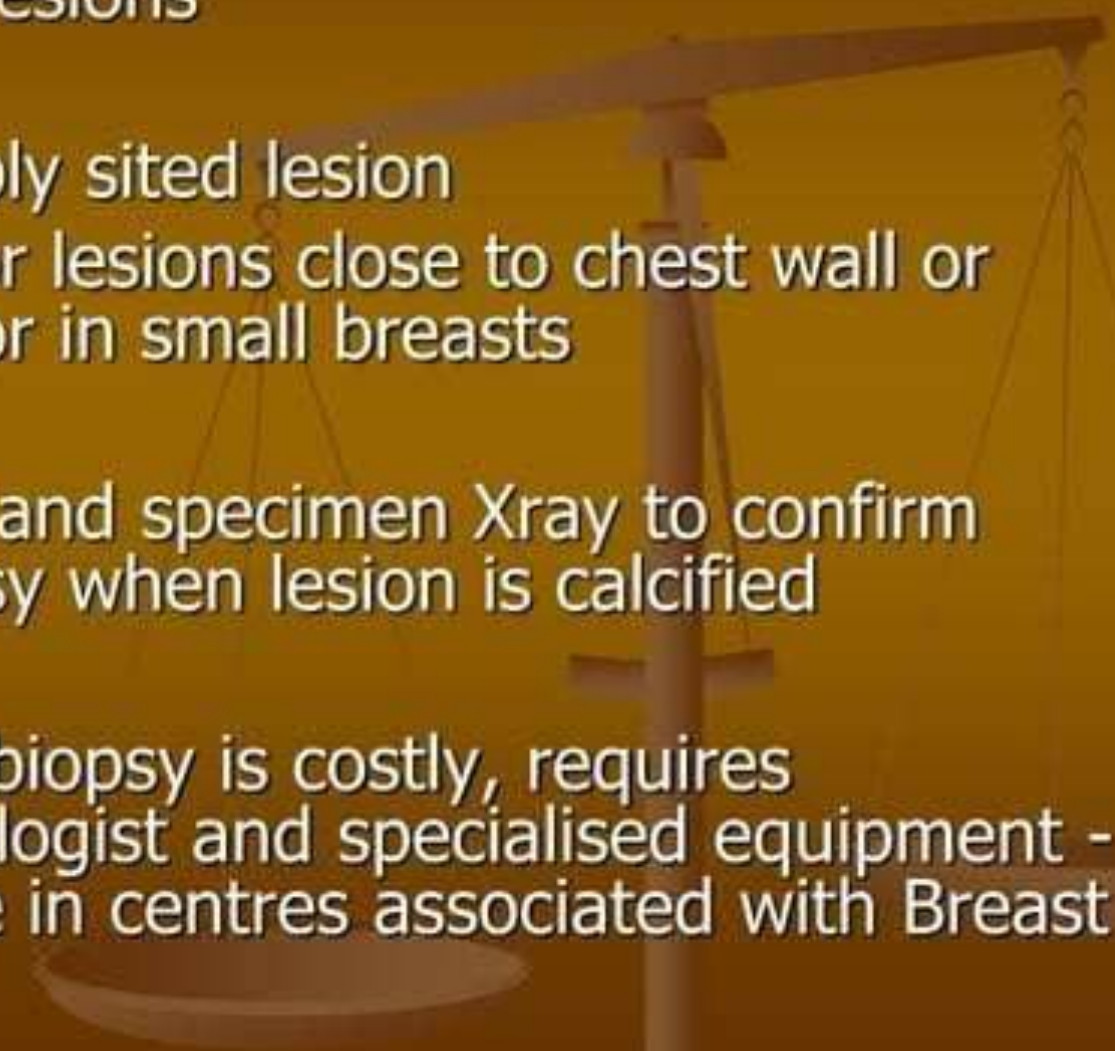
# Stereotactic Biopsy

- Suspicious mammographic abnormalities
- Patients lay prone





# Stereotactic MMG guided core biopsy

- Accurate computer guided method to biopsy impalpable MMG lesions
  - Requires favourably sited lesion
    - Less suitable for lesions close to chest wall or nipple/areola, or in small breasts
  - Post biopsy MMG and specimen Xray to confirm adequacy of biopsy when lesion is calcified
  - Stereotactic core biopsy is costly, requires experienced radiologist and specialised equipment - only cost effective in centres associated with Breast Screen
- 

## ■ Advanced stereotactic techniques

### ■ Mammotome

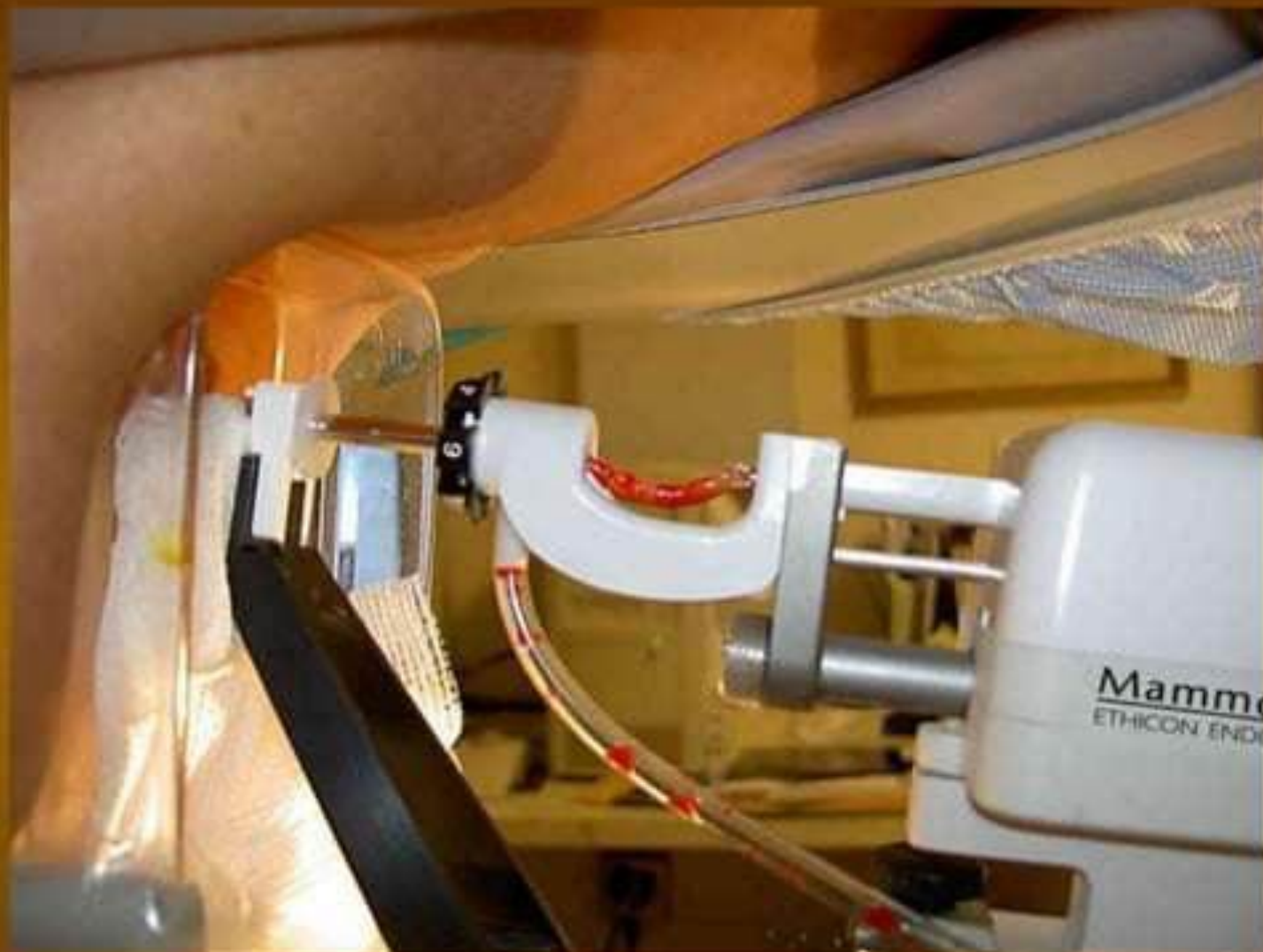
- 11G core biopsy under USS guidance
- Rotating coring instrument aided by suction
- Leave radioactive marker if completely excised
- Expensive – \$50 000 per instrument and \$600 per needle

### ■ Advanced breast biopsy instrument (ABBI)

- Pt prone with breast hanging through aperture in table
- Lesion sited with computerised stereotaxis and multiple machine driven cores sampled
- Also expensive but accurate









# Open Biopsy



- Gold Standard
- Indications
  - Cytological or histological diagnosis not obtained and still strong clinical suspicion
  - Result of core biopsy is not consistent with radiological appearance
  - Radial scar - should be localised and excised no matter what cytology or core results because of a real association with malignancy
- Independent procedure or part of planned treatment
- Lesions should ideally be excised completely
- Impalpable lesions require needle localisation under MMG or USS guidance
- Post excision, specimen oriented and sent for X ray if impalpable

# Advantages of FNA and Core Biopsy over open biopsy

- Done under LA
- Enables single stage definitive surgery after confirming diagnosis – reduce number of surgical procedures performed
- Allow diagnosis and hormone receptor analysis in pts with locally advanced inoperable breast cancer
- Core biopsy can affect decisions re axillary dissection – core biopsy can distinguish invasive ca from CIS
- Compared with open biopsy, core biopsy is accurate without cost, morbidity and time off work associated with an open procedure
  - Stereotactic core biopsy 1/5 cost of excision biopsy
- Number of operations minimised allowing surgical resources to be used mainly for therapeutic rather than diagnostic operations



# screening

## 3 components to screening

### 1. Breast Self Exam

- Every month 20 yrs old or older

### 2. Clinical Breast Exam

- Detects 3%-45% missed by mammography

- Sensitivity/specificity are 54% and 94% respectively

- Every 3 yrs for 20-39 yrs old

- Every year for 39 and older

### 3. Screening Mammography

- Every year >40 yrs old



# Screening



- Prior breast cancer or atypia
  - Annual mammography
  - 6 mo CBE
- Family Hx
  - 10 yrs younger than relative's diagnosis
  - 6 mo CBE
- BRCA
  - 25 yo – annual mammography
  - 6 mo CBE

# Genetics

- Early age of onset
  - 2 breast primaries or breast and ovarian CA
  - Clustering of breast CA with:
    - Male breast CA,
    - Thyroid CA,
    - Sarcoma,
    - Adrenocortical CA,
    - Pancreatic CA
    - leukemia/lymphoma on same side of family
  - Family member with BRCA gene
  - Male breast CA
  - Ovarian CA
- 

# Genetics

- Hereditary Breast/Ovarian Syndrome
    - BRCA 1 – chromosome 17
    - BRCA 2 – chromosome 13
  - Li-Fraumeni Syndrome
    - P53 mutation – chromosome 17
  - Cowden Syndrome
    - PTEN mutation – chromosome 10
      - Autosomal dominant pattern
- 

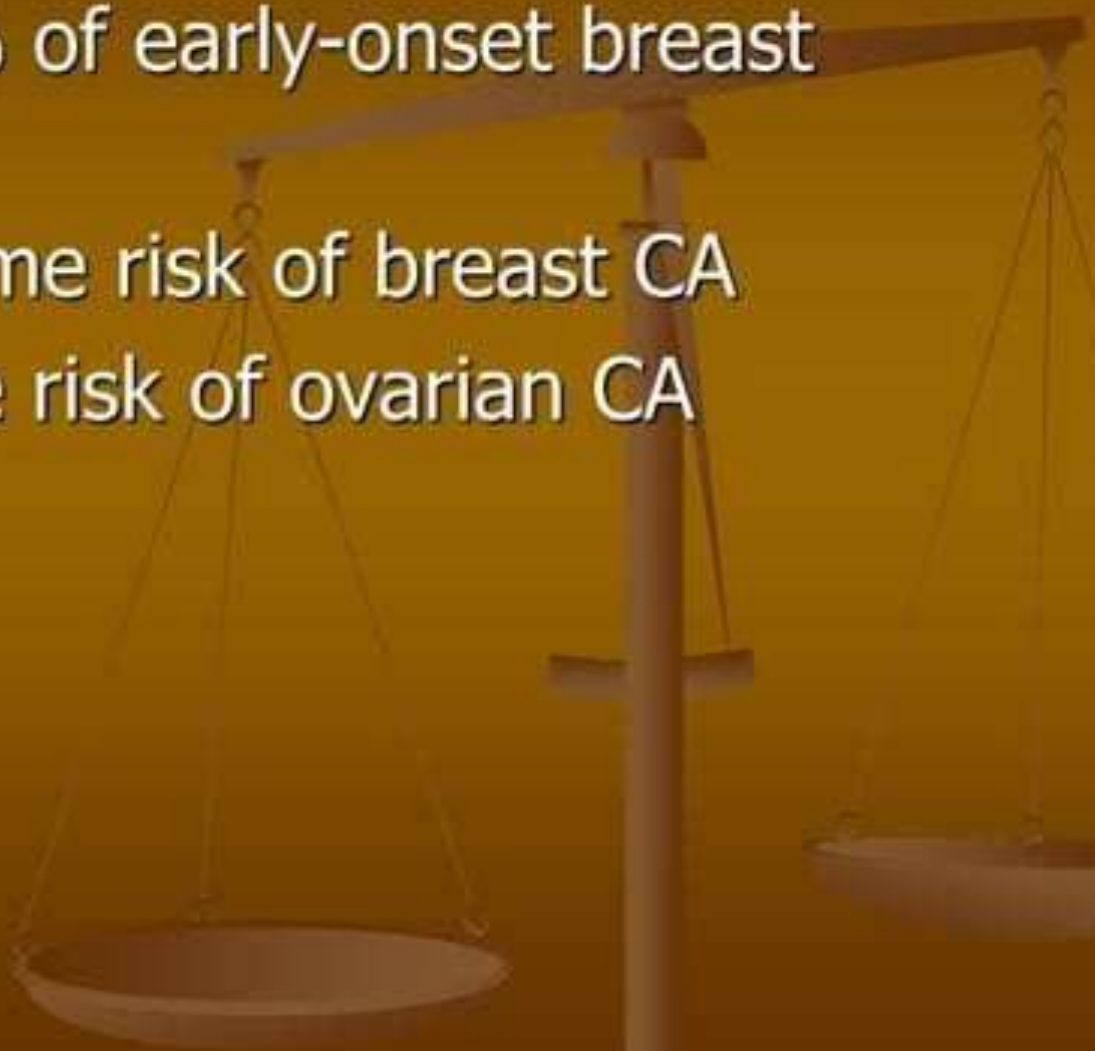


# BRCA

- BRCA 1 gene
  - Ovarian CA
- BRCA 2 gene
  - Male breast CA
  - Prostate CA
  - Pancreatic CA



# BRCA

- Account to 25% of early-onset breast cancers
  - 36%-85% lifetime risk of breast CA
  - 16-60% lifetime risk of ovarian CA
- 

# BRCA

## ■ Management

- Monthly BSE -- 18yo
- 6 mo CBE & annual mammo -- 25yo
- Discuss risk reducing options
  - Prophylactic mastectomies
  - Salpingo-oophorectomy – upon completion of child bearing
- 6 mo transvaginal US & CA125 – 35 yo



# Li-Fraumeni Syndrome

- Mutation of p53 gene
  - Tumor suppressor
- Premenopausal breast CA
  - Childhood sarcoma
  - Brain tumors
  - Leukemia
  - Adrenocortical CA
- Accounts for 1% of breast CA



# Cowden Syndrome

- Major criteria
  - Thyroid CA (follicular)
  - Macrocephaly
  - Cerebellar tumors
  - Endometrial CA
  - Breast CA – 25%-50% risk
  - Skin and mucosal lesions
- Minor criteria
  - Thyroid lesions
  - GU tumors
  - GI hamartomas
  - Fibrocystic breast
  - Mental retardation



# Experimental/ Emerging Techniques

- Genetic Screening- may assess risk but not direct diagnostic efforts in individuals
- Electrical Biophysical - uses properties of ionic concentration unique in normal epithelial surfaces
- Ductal Based Screening and Treatment - ductal lavage and ROBE or breast endoscopy – **still limited by pathology accuracy and recent data shows random PAFNA superior at identifying epithelial proliferative disease in chemoprevention (celebrex trial)**
  - ***New scope and hypermethylation mapping***
  - ***Lavage of non-fluid producing ducts in PAFNA +***



## A delay in diagnosis is due to following:

- Physician's lack of suspicion esp. in young women
- Similar presentation of benign and malignant breast lesions
- Lack of radiological evidence of cancer in palpable mass
- Mammography of young women with high rate of false negatives.
- 
- "Triad of Error" accounts for women at highest risk
- for delayed diagnosis ( 3/4ths of women with
- delayed diagnosis of Br Ca):
  1. Women younger than 45
  2. Self discovered breast mass
  3. Negative mammography
-

## ***Conclusion - Key points***

- ***Benign breast disorders & diseases are common***
  - ***The aetiopathogenesis is complex and not fully understood***
  - ***The ANDI classification is a unifying concept***
  - ***Histological risk factors for future malignancy are relative and not absolute risk factors***
  - ***Lump and pain are the most common complaints***
  - ***Evaluation is done by Triple assessment***
  - ***Treatment is based on the natural history of clinical problems***
  - ***Management algorithms are general guidelines***
  - ***Treatment must be tailored to individual needs***
- 



# BENIGN LESIONS OF THE BREAST

## 1. **Non-proliferative lesions:**

### a. **Chronic Cystic Mastitis** (Fibrocystic disease, fibroadenosis, Schimmelbusch's dse.)

- most common breast lesion (30-40y/o)
- Hormonal imbalance (exact etiology - ?)
  - Increase estrogen production – producing exaggerated responses
  - Some parts of the breast is hyper-reacting
- Manifestations:
  1. Unilateral / Bilateral
  2. Rubbery in consistency, not encapsulated
  3. Size changes / can be tender ---> related to menstrual cycle
  4. 15% presents a nipple discharge
  5. *(-) risk factor of carcinoma degeneration*
  6. *Co-exist w/ breast carcinoma* (mammography is suggested)
- **Schimmelbusch disease:** classic diffuse cystic disease
- **Bloodgood cyst:** single, tense, large blue domed cyst
- Treatment:
  - Conservative for small and not very painful and tender lesions
    - Danazol – alleviate mod to severe painful & tender
      - synthetic FSH and LH analog
      - Suppresses FSH and LH
      - 100 – 400mg
  - Surgery for Bloodgood cyst



# BENIGN LESIONS OF THE BREAST

## 3. **Intra-ductal Papilloma:**

- Proliferation of the ductal epithelium; 75% occurs beneath the epithelium
- Commonly causes *Bloody Nipple Discharge*
  - Palpable mass – 95% is intra-ductal papilloma
  - Non-palpable mass – possibility of malignancy is increased: (Ductography)
    - a. Paget disease of the nipple
    - b. Adenoma of the nipple
    - c. Deep lying carcinoma w/ ductal invasion
- Treatment:
  - Excision of a palpable mass by biopsy
  - Non-palpable mass --> do wedge resection of the nipple/areola based on ductographic result or PE (+) bloody discharge

# BENIGN LESIONS OF THE BREAST

5. **Mammary Duct Ectasia** (Plasma cell mastitis, Comedomastitis & Chronic mastitis)
- Sub-acute inflammation of the ductal system usually beginning in the subareolar area w/ ductal obstruction
  - Usually present as a hard mass beneath or near areola w/ either nipple or skin retraction due to increase fibrosis
  - Appears during or after menopausal period w/ hx. Of difficulty of nursing
  - Histologically, the duct are dilated and filled w/ debris and fatty material w/ atrophic epithelium. Sheets of plasma cells in the periductal area.
  - Treatment:
    - Excision biopsy



# BENIGN LESIONS OF THE BREAST

## 6. Galactocele:

- Cystic or solid mass w/ or w/o tenderness
- Occurs during or after lactation
- Due to obstruction of a duct distended w/ milk
- Treatment:
  - w/ abscess ---> incision and drain
  - Solid mass ---> excision biopsy

## 7. Fat necrosis:

- Present as a solid mass, usually asymptomatic
- w/ or w/o history of trauma
- Treatment:
  - Excision biopsy



# BENIGN LESIONS OF THE BREAST

## 8. **Acute Mastitis / Abscess:**

- Bacterial infection usually during 1<sup>st</sup> week of lactation
- s/sx of inflammation
- Treatment:
  - Proper hygiene
  - Cellulitis ----> antibiotics / analgesic
  - Abscess ----> incision and drain

# BENIGN LESIONS OF THE BREAST

## 9. **Gynecomastia:**

- Development of female type of breast in male
- Usually unilateral, if bilateral look for systemic causes:
  - a. Hepatic cirrhosis (for elderly alcoholic)
  - b. Estrogen medication for prostatic CA
  - c. Tumor producing estrogen/progesterone
    - Pituitary / Adrenal / Testes
    - CT scan / PE
- Treatment:
  - Subcutaneous mastectomy (if other lesions, producing estrogen/progesterone, present)
  - Tumor secreting estrogen ---> tx primary cause

# BENIGN LESIONS OF THE BREAST

## 10. **Developmental Abnormality:**

- a. Amastia
- b. Polymastia
- c. Athelia
- d. Polythelia

- Treatment:
  - plastic surgery





# BREAST CANCER

"... THE REAL HOPE FOR IMPROVEMENT DOES NOT REST ON AN EXTENSION OF OPERATIVE PROCEDURES, BUT AN EARLY RECOGNITION AND EARLIER EXTIRPATION OF THE FOCUS OF INVASION..."

W.S. HALSTED, 12/1894