Diseases of the breast
(1 of 2)

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# Introduction

<table>
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<th>NORMAL</th>
<th>LESIONS</th>
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| Lobules and terminal ducts | Cyst  
Sclerosing adenosis  
Small duct papilloma  
Hyperplasia  
Atypical hyperplasia  
Carcinoma |
| Large ducts | Duct ectasia  
Squamous metaplasia of lactiferous ducts  
Large duct papilloma  
Paget disease |
| Intralobular stroma | Fibroadenoma  
Phyllodes tumor |
| Interlobular stroma | Fat necrosis  
Lipoma  
Fibromatosis  
Sarcoma |

- Lobule
- Terminal duct (interlobular duct)
- Lobule
- Lactiferous ducts
- Terminal duct lobular unit
A histology introduction

Normal ducts and lobules of the breast are lined by two layers of cells—a layer of **luminal cells** overlying a second layer of **myoepithelial cells**.
**Fibrocystic changes**

- The most common breast abnormality seen in premenopausal women

- Most likely a consequence of the cyclic breast changes that occur normally in the menstrual cycle…but not associated with OCPs

- Composed of **nonproliferative** and **proliferative changes**
  - Fibrosis
  - Cysts...due to dilation of ducts
  - **Epithelial hyperplasia**...more than two luminal cell layers also myoepithelial cells may increase two types... **typical or atypical hyperplasia**
  - Sclerosing adenosis
Nonproliferative changes, morphology

• Usually multifocal and often bilateral lesions

• **Ill-defined**, diffusely increased densities and discrete nodularities on mammography
grossly:

• Unopened, they are **brown to blue** (blue dome cysts) and are filled with watery, turbid fluid

• The secretions within the cysts may calcify, producing **microcalcifications** on mammograms

• Histologically: an epithelial lining that in larger cysts may be flattened or even totally atrophic

...frequently, the lining cells are large and polygonal with abundant granular, eosinophilic cytoplasm and small, round, deeply chromatic nuclei. Such morphology is called apocrine metaplasia

...A stromal lymphocytic infiltrate is common
Proliferative changes, morphology

- Coexisting fibrous or cystic changes are usually present

- The ducts, ductules, or lobules may be filled with orderly cuboidal cells within which small gland patterns (called fenestrations) can be seen

- Sometimes, the proliferating epithelium projects as multiple small papillary excrescences into the ductal lumen (ductal papillomatosis)

- Occasionally, hyperplasia produces microcalcifications on mammography

- There is also atypical ductal hyperplasia (resembles ductal carcinoma in situ) and another lesion called: atypical lobular hyperplasia (resembles lobular carcinoma in situ)
Proliferative changes, **sclerosing adenosis**

- less common than cysts and hyperplasia

- Significant because its clinical and morphologic features may mimic those of **carcinoma**
Relationship of fibrocystic changes to breast carcinoma

- *Minimal or no increased risk of breast carcinoma:* fibrosis, cystic changes, apocrine metaplasia, mild hyperplasia
- *Slightly increased risk* (1.5- to 2-fold): moderate to florid hyperplasia (without atypia), ductal papillomatosis, sclerosing adenosis
- *Significantly increased risk* (5-fold): atypical hyperplasia, whether ductular or lobular

* Bilaterality & multifocality of proliferative epithelial changes and related cancers are common
Fibroadenoma

• The most common benign neoplasm of the female breast

• Typically appear in young women with a peak incidence in the third decade of life

• A biphasic tumor composed of fibroblastic stroma and epithelium-lined glands
  ...only the stromal cells are clonal and truly neoplastic

• Usually manifest as solitary, discrete, mobile masses

• There is a role of estrogen:
  ...fibroadenomas may enlarge late in the menstrual cycle and during pregnancy
  ...after menopause, they may regress and calcify
Fibroadenoma, morphology

• Discrete masses, 1 cm to 10 cm in diameter and of firm consistency

• Cut section shows a uniform tan-white color, punctuated by softer yellow-pink specks representing the glandular areas

• Histologically:
  ...loose fibroblastic stroma containing duct-like, epithelium-lined spaces of various shapes and sizes
  ...as in normal breast tissue, these glandular spaces are lined by luminal and myoepithelial cells with a well-defined, intact basement membrane
Fibroadenoma, morphology...cont’d
Phyllodes tumor

- Biphasic, being composed of neoplastic stromal cells and epithelium-lined glands

- The stromal element of these tumors is more cellular and abundant, often forming epithelium-lined leaflike projections (phyllodes is Greek for “leaflike”)

- Much less common than fibroadenomas

- Can be benign, borderline or malignant

...but mostly benign
Phyllodes tumor, cont’d

• **Features suggestive of malignancy:**
  - Increased stromal cellularity
  - Anaplasia in stromal cells
  - High mitotic activity
  - Rapid increase in size
  - Infiltrative margins

• Benign phyllodes is well-localized and is removed by excision

• Malignant lesions may recur, but they also tend to remain localized
  
  recurrence is more than metastasis but it may metastasize
Intraductal papilloma

• A benign neoplastic papillary growth

• It is most often seen in premenopausal women

• Typically solitary and found within the principal lactiferous ducts or sinuses

• On histologic examination:
  ...they are composed of multiple papillae, each having a connective tissue core covered by epithelial cells that are double-layered, with an outer luminal layer overlying a myoepithelial layer
  ...The presence of a double-layered epithelium helps to distinguish intraductal papilloma from intraductal papillary carcinoma, which can present with clinical features similar to benign papilloma

*Clinically:
• Serous or bloody nipple discharge
• The presence of a small subareolar tumor a few millimeters in diameter
• Nipple retraction, in rare instances
Acute mastitis

• Bacteria, usually *Staphylococcus aureus*, gain access to the breast tissue through the ducts

• The vast majority of cases arise during the early weeks of nursing, when the skin of the nipple is vulnerable to the development of fissures

• Clinically, staphylococcal infections induce typical acute inflammatory changes, which can progress to form single or multiple abscesses
Mammary duct ectasia

• A nonbacterial chronic inflammation of the breast associated with inspissation of breast secretions in the **main excretory ducts**

• Ductal dilation and eventual rupture leads to reactive changes in the surrounding tissue that may present as a poorly defined periareolar mass with nipple retraction, mimicking the changes caused by some cancers

• It is an uncommon condition usually encountered in **parous women** between 40 and 60 years of age

• Periductal lymphoplasmacytic inflammation is the most distinguishing feature microscopically **ectasia is not enough to tell that the patient has mammary duct ectasia we must see chronic inflammation and specially plasma cells.**
Fat necrosis

• Uncommon, innocuous lesion that is significant only because it often produces a mass...may be very similar to cancer clinically and radiologically ...
  as a painless palpable mass, skin thickening or retraction, or mammographic densities or calcifications

• Most women with this condition report some antecedent trauma to the breast
Fat necrosis, morphology

• During the early stage of traumatic fat necrosis, the lesion is small, often tender, rarely more than 2 cm in diameter, and sharply localized

• Eventually is replaced by scar tissue or a cyst consisting of necrotic debris

• Calcifications may develop in either the scar or the cyst wall
Squamous Metaplasia of Lactiferous Ducts (Zuska disease)

• Painful erythematous subareolar mass that clinically appears to be a bacterial abscess...women and sometimes, men

• More than 90% of the afflicted are smokers

• Squamous metaplasia causes keratin plugging in the ducts, followed by rupture and superimposed infection...recurrent subareolar abscesses

• With recurrence, a fistula tract opens into the edge of the areola
Thank You