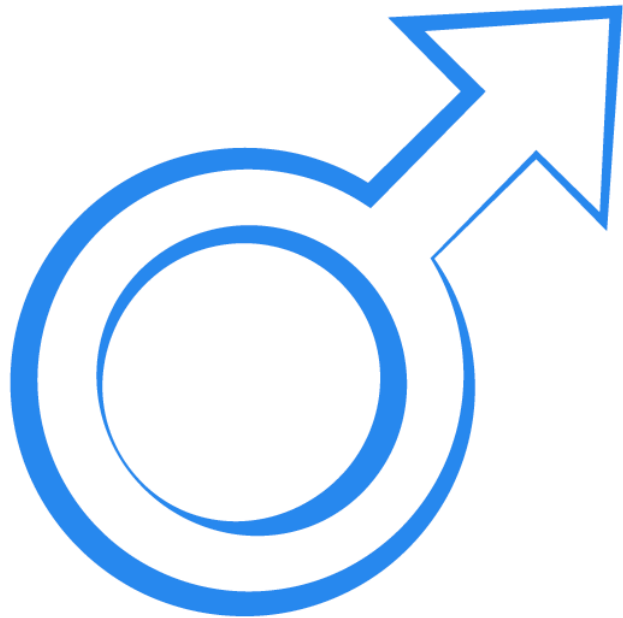
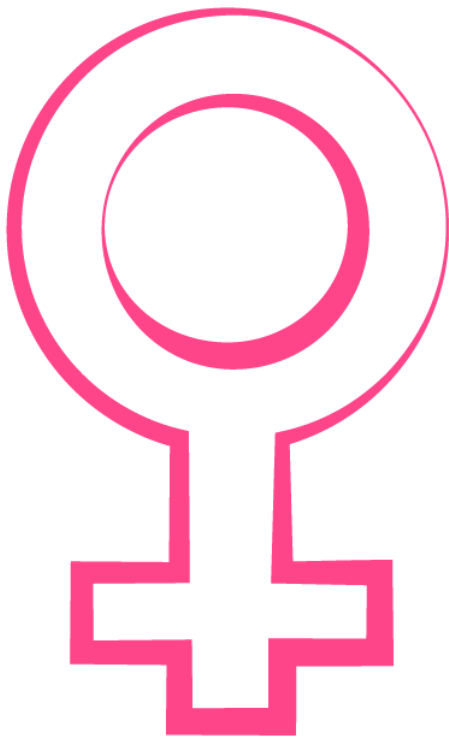


Reproductive System Block

Pathology OSPE



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Testicular atrophy "NOT important"

Definition: Testicular atrophy is a disease, which results in the decrease of testicular size.

Clinical presentations: testicular pain, impotence or sexual dysfunction, infertility, delays or disorders of puberty.

Etiology: Bilateral atrophy may occur with a variety of conditions including chronic alcoholism, hypopituitarism, atherosclerosis, chemotherapy or radiation, and severe prolonged illness.

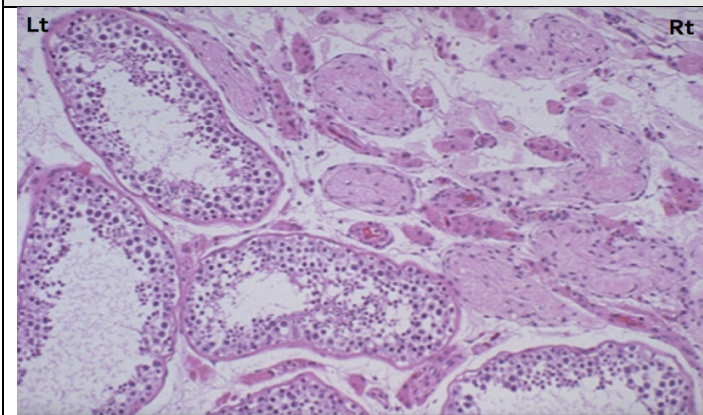
GROSS



Left: normal testis

Right: atrophied testis

MICROSCOPIC



- Focal atrophy of tubules in the upper right.
- patchy orchitis caused by mumps virus infection in childhood.

Seminoma of the testis

Definition: Germ cell neoplasms are most common type of testicular tumors

Incidence: 15 - 34 age group



Risk factors: chriptorchidism “undesended testicle”

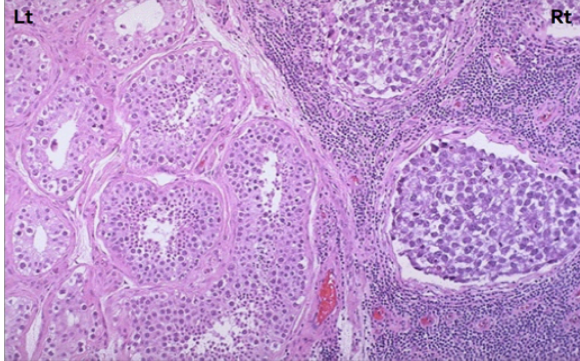
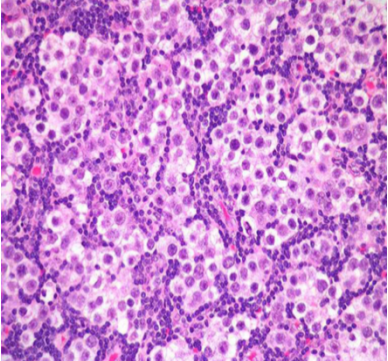
Related genes: intratubular germ cell neoplasia of the unclassified type (IGCNU)

Stain: positive for PLAP and OCT4

Treatment: highlyly sensitive to radiotherapy

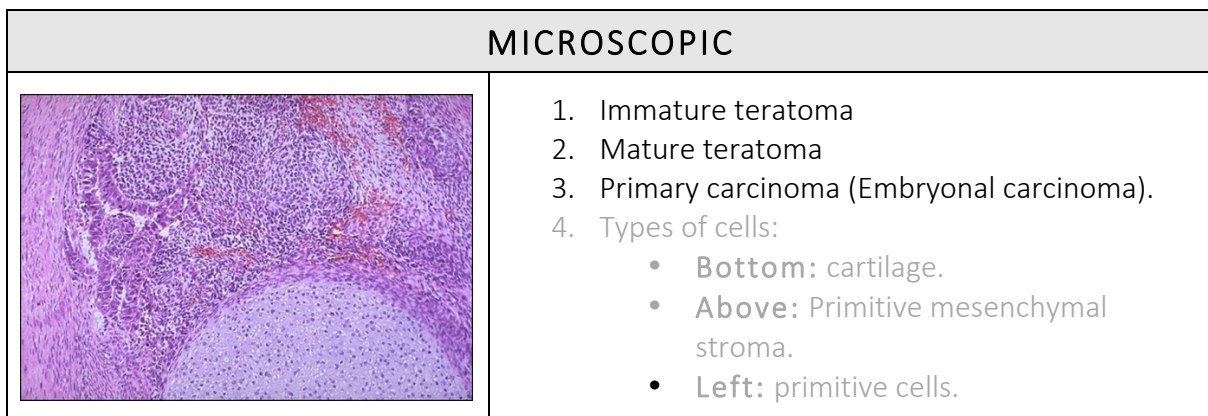
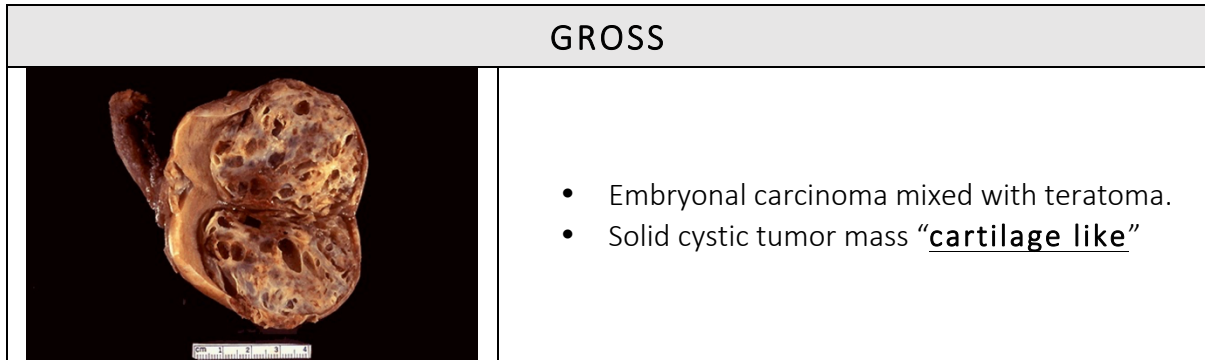
Note: They often have several histologic components: seminoma, embryonal carcinoma, teratoma & choriocarcinoma.

GROSS	
	
<ul style="list-style-type: none"> • Well circumscribed • Lobulated, pale testicular mass • Congested spermatic cord • Bulging & potato-like cut surface 	<ul style="list-style-type: none"> • Well circumscribed mass • Lobulated cut surface

MICROSCOPIC	
	
<p>Left: normal testis</p> <p>Right:</p> <ul style="list-style-type: none"> • Nests of uniform tumor cells • Lymphocytes “lymphoid stroma” between nests of seminoma. 	<ul style="list-style-type: none"> • sheets of uniform tumor cells • large vesicular nuclei • prominent nucleoli. • presence of lymphocytes

Embryonal carcinoma & teratoma of testis

Definition of teratoma: It is a tumor composed of various different types of cells or organ components.



Benign prostatic hyperplasia (BPH) **“Very Important”**

Definition: Also known as **benign nodular hyperplasia**. It is hyperplasia of glands & stroma of prostate results in large nodular enlargement. Occurs in the **periurethral region (transitional zone)** of the prostate. It is not a premalignant lesion (no increase risk of cancer).

Clinical presentation: **Urine retention, dribbling, Nocturia, bladder hypertrophy,**

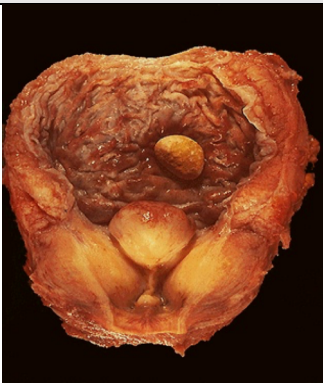

Incidence: Extremely common lesion in men over age 50, 20% in men over age 40, up to 70% by age 60, and 90% by age 80.

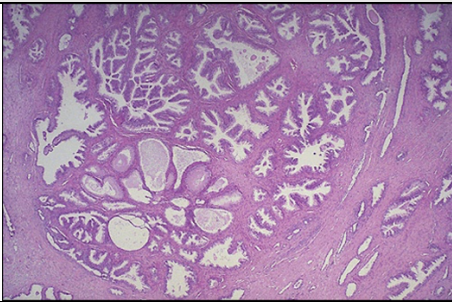
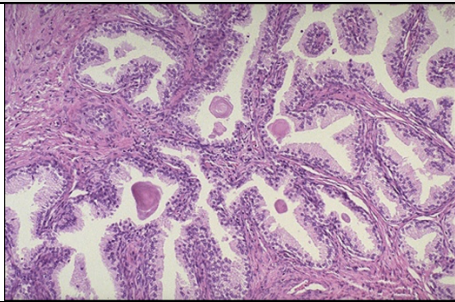
Complications: **Hydronephrosis (dilatation of ureter & kidney), UTI, distended bladder,** obstruction with stasis also led to the formation of the **yellow-brown calculus** (stone).

Treatment:

- Mild case > α receptor blockers and 5- α -reductase inhibitors.
- Moderate - Severe > Transurethral resection of the prostate

Hormonal involvement: **Dihydrotestosterone (DHT)** (Testosterone is converted to dihydrotestosterone (DHT) by 5 -alpha reductase enzymes, dihydrotestosterone (DHT) binds to androgen receptors in epithelial cells and stroma → increases the proliferation of stromal cells & inhibits epithelial cell death.)

GROSS	
	
Nodular enlargement of prostate	<ul style="list-style-type: none"> • Nodular enlargement of prostate • Prostatic urethra

MICROSCOPIC	
	
<ol style="list-style-type: none"> 1. Hyperplastic gland and stroma 2. Glands lined by two layers 3. Carpora amylacea 	<ol style="list-style-type: none"> 1. Hyperplastic gland and stroma 2. Glands lined by two layers 3. Carpora amylacea

Adenocarcinoma of prostate

Definition: Malignancy of the prostate mostly arise in the **peripheral zone of the posterior part**, most common form of cancer in men

Clinical presentations: Asymptomatic until the last stages (urinary symptoms).

Lab investigations: **PSA** (Prostate Specific Antigen) will be elevated mostly (not specific for cancer)

Incidence: Disease of men over age 50, more prevalent among African Americans.


Etiology: Androgens believed to play a major role in the pathogenesis.

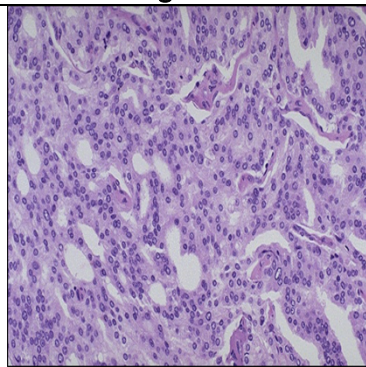
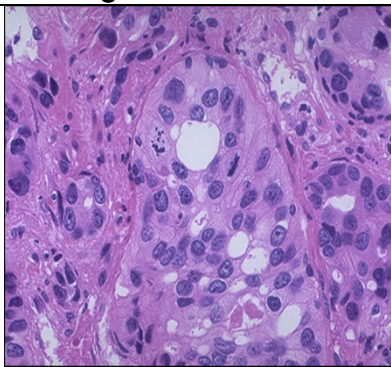
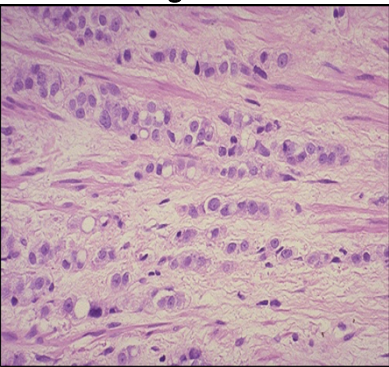
Risk factors: Age, race, family history, hormone level (androgens) & environmental (high fat diet).

Complications: Metastasis to the bones mostly vertebra (Lymphatic or hematogenous) → appears as back pain.

Treatment: Surgery, Radiotherapy and hormonal therapy.

Prognosis: good if discovered early.

GROSS	
	<p>Multiple irregular yellowish nodules, mostly in the peripheral zone of the posterior part.</p>

MICROSCOPIC		
Stage four	Stage four and five	Stage five
		
<ul style="list-style-type: none"> • Fused malignant glands • Glands are lined by one layer & still recognizable • hyperchromatic nuclei • Prominent nucleoli. 	<ul style="list-style-type: none"> • Fused malignant glands • Glands lined by one layer & still recognizable • hyperchromatic nuclei • Prominent nucleoli. • Mitotic figures 	<ul style="list-style-type: none"> • Single cells infiltrating in rows • hyperchromatic nuclei • Prominent nucleoli. • No glandular structure is recognizable

Uterine leiomyoma

Definition: benign tumor of smooth muscle origin.

Clinical presentations: single or multiple masses, irregular abnormal bleeding, pelvic pain, pelvic mass, infertility, menorrhagia and anemia, urinary frequency and urgency, abortion, postpartum hemorrhage, and it can be entirely asymptomatic.

Incidence: most common neoplasm of the female genital tract & probably the most common neoplasm in women.

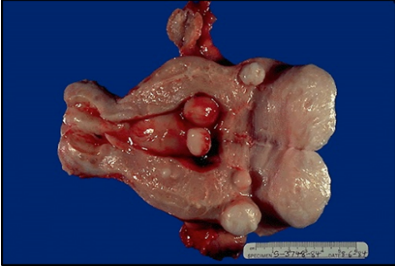


Etiology: Estrogens and possibly oral contraceptives stimulate their growth; they shrink postmenopausally.

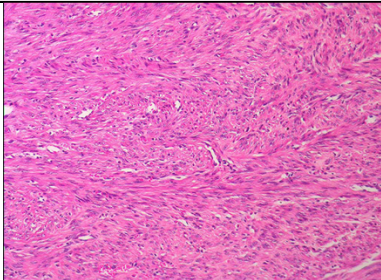
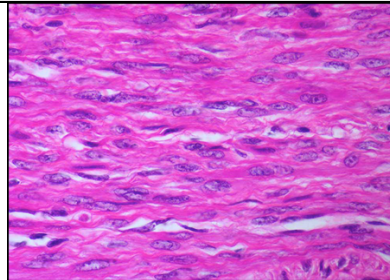
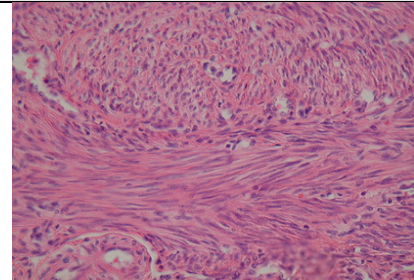
Risk factors: About 40% of leiomyomas have an associated chromosomal abnormality

Influencing factors: estrogen responsive and often increases in size during pregnancy and decreases in size during menopause.

Complications: no appreciable malignant potential (<0.5% malignant transformation incidence)

Treatment: Excision if needed.

GROSS		
		
Multiple submucosal, intramural, & subserosal well circumscribed uterine masses with whorled cut surface	well circumscribed uterine masses with whorled cut surface	

MICROSCOPIC		
		
<ul style="list-style-type: none"> • interlacing bundles of smooth muscle & fibrous tissue. • smooth muscle cells are spindle shaped with eosinophilic cytoplasm. 		

Endometrial hyperplasia

Definition: There is more glands and less stroma when compared to normal.

Clinical presentations:


1. Metrorrhagia (uterine bleeding at irregular intervals), or
2. Menorrhagia (excessive bleeding with menstrual periods), or
3. Menometrorrhagia (prolonged or excessive uterine bleeding occurs irregularly and more frequently than normal)

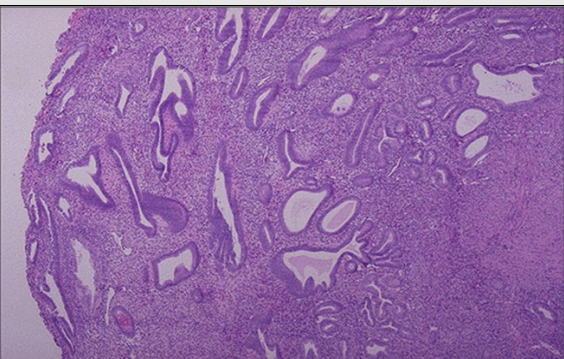
Etiology: Any condition in which there is high estrogen level E.g.

1. Anovulatory menstrual cycles
2. Exogenous administration of estrogenic steroids

Risk factors: 1- Obesity 2- Western diet 3- Diabetes Mellitus 4- Hypertension 5- **Hyperestrinism** 6- Nulliparity

Complications: May progress to **endometrial adenocarcinoma**

GROSS	
	<p>Papillary growth in the endometrial cavity</p>

MICROSCOPIC	
	<ul style="list-style-type: none"> • Crowded cystically dilated glands with spindle cells. • Glands are enlarged and irregular with columnar cells • <u>Increase gland\stroma ratio</u>

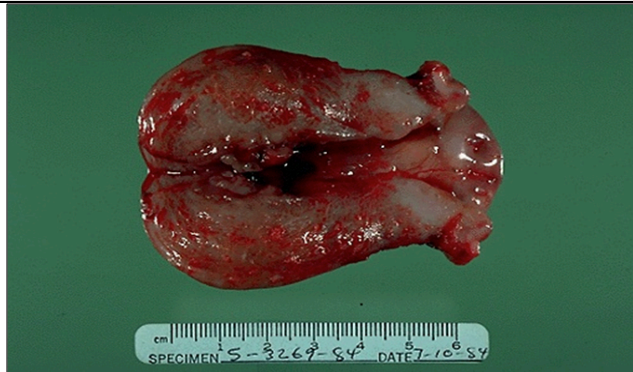
Endometrial adenocarcinoma

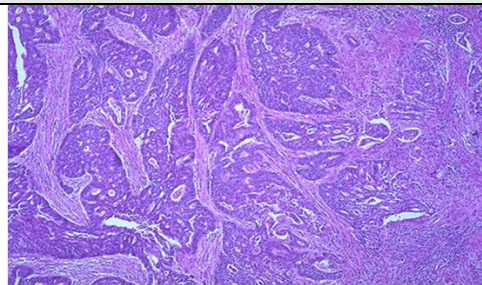
Definition: Is a common neoplasm in women, it generally appears in postmenopausal women & is uncommon before age 40.

Clinical presentations: postmenopausal bleeding, excessive leukorrhea

	Type 1	Type 2
Incidence	80% of endometrial cancers is (endometrioid carcinoma) Associated with estrogen excess and endometrial hyperplasia	papillary serous carcinoma
Risk factors	obesity, estrogen therapy, nulliparity, late menopause	older women, with endometrial atrophy
Related genes	PTEN gene	Mutations in p53

- The diagnosis of endometrial cancer must be confirmed by biopsy or curettage and histologic examination of the tissue.

GROSS	
 <p>A gross specimen of a uterus, cut open to show the internal cavity. An irregular, dark red mass is visible in the upper fundus. A ruler is placed below the specimen for scale, showing a measurement of approximately 5 cm. The ruler has markings in centimeters and millimeters. Below the ruler, the text 'SPECIMEN S-3269-S4 DATE 7-10-84' is visible.</p>	<ol style="list-style-type: none"> 1. The uterus is not enlarged 2. Irregular mass in the upper fundus that proved to be endometrial adenocarcinoma on biopsy

MICROSCOPIC	
 <p>A microscopic view of endometrial adenocarcinoma, stained with hematoxylin and eosin (H&E). The image shows numerous irregular, fused glands with a cripriform (finger-like) appearance. The glands are lined by malignant epithelial cells with hyperchromatic nuclei and scant cytoplasm. There is minimal stroma between the glands.</p>	<p>cripriform fused malignant glands with minimal stroma</p>

- The different between the hyperplasia and adenocarcinoma is that in hyperplasia there is stroma but in carcinoma there is no stroma

Uterine leiomyosarcoma "NOT important"

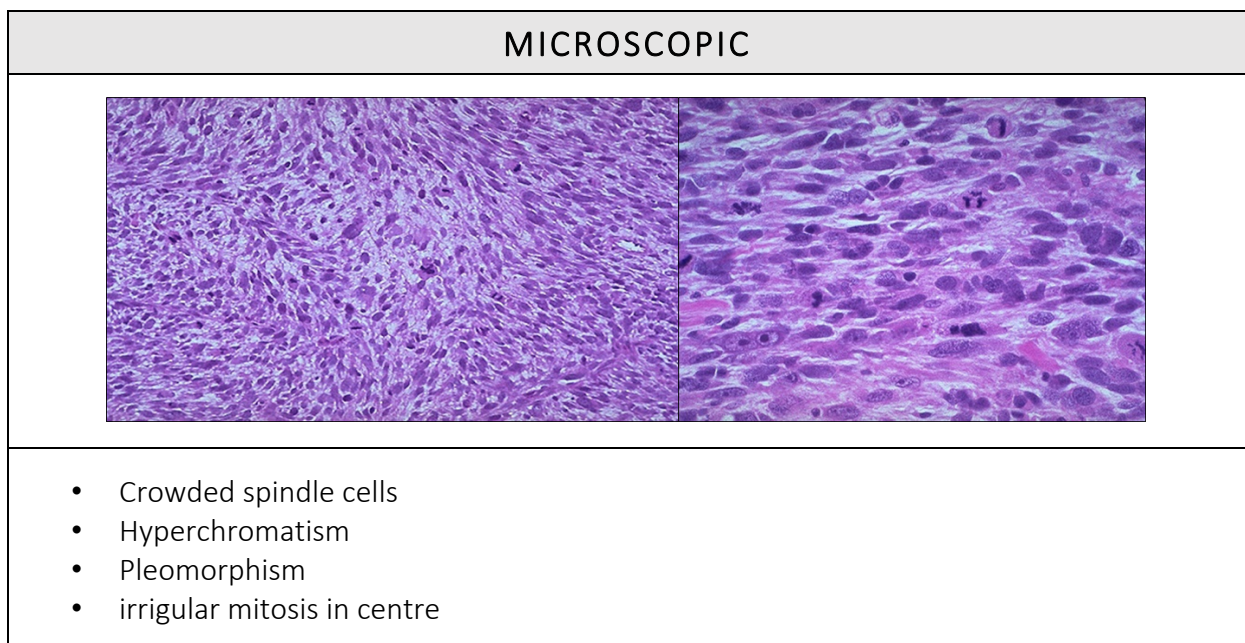
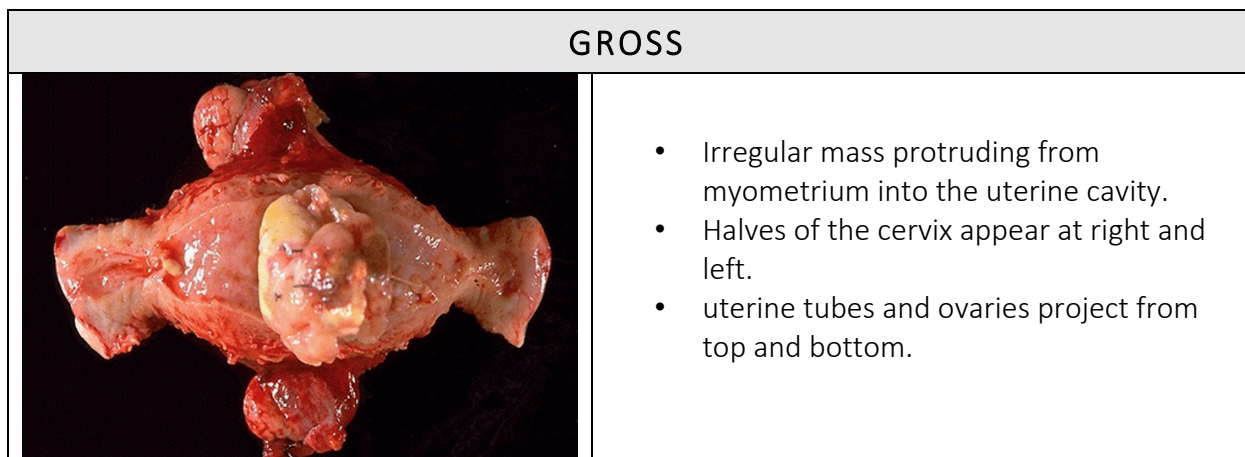
Definition: It is the malignant tumor of the smooth muscle.

Clinical presentations: usually hemorrhagic and soft masses which can affect any smooth muscle tissue, even the walls of blood vessels, so the presentation can differ very widely depending on the location of involvement.

Incidence: rare.

Complications: Poor prognosis.

Treatment: Excision, chemotherapy.



Endometriosis **“Very Important”**

Definition: The presence of ectopic endometrial glands and stroma outside the uterus “Mostly ovaries”

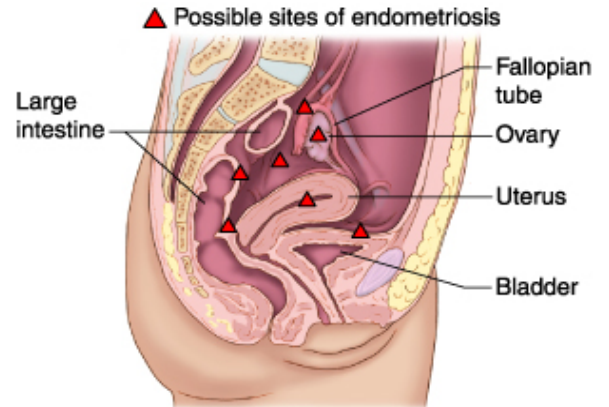
Causes: Regurgitation: Menstrual back flow to fallopian tube → implantation or vascular lymphatic.

Clinical presentations: Dysmenorrhea, cyclic abdominal pain and dyspareunia (difficult or painful sexual intercourse).


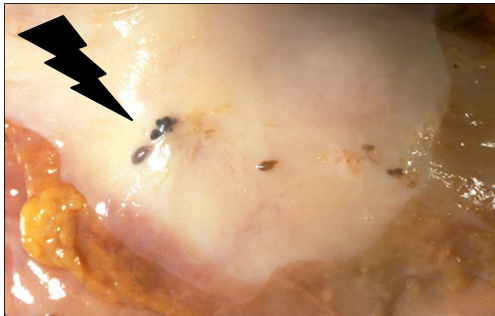
Common sites: ovaries, bladder, Pouch of Douglas, uterine ligaments, fallopian tubes, external genitalia (vulva), intestine, cervix, and vagina.

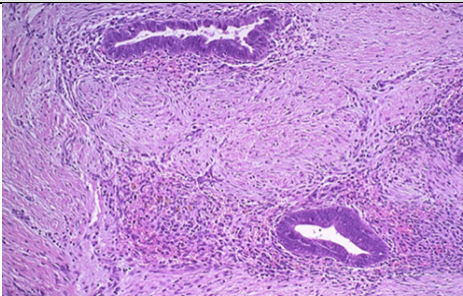
Complications: Infertility, Adhesions.

Treatment: Benign with no malignant potential. May recur after surgical excision but the risk is low.



- **If present in the ovary and not treated may cause “Endometriod adenocarcinoma”**
- **If present in myometrium it is called “Adenomyosis”**
- Endometriosis is symptomatic during reproductive years

GROSS	
	
Blood is darker and gives the small foci of endometriosis " powder burns "	Small dark hemorrhagic area in the pouch of Douglas

MICROSCOPIC	
	Presence of endometrial glands and stroma in the smooth muscle wall of the colon.

Cervical dysplasia

Definition: is a precancerous condition in which abnormal cell growth occurs on the surface lining of the cervix, it's also called (CIN).

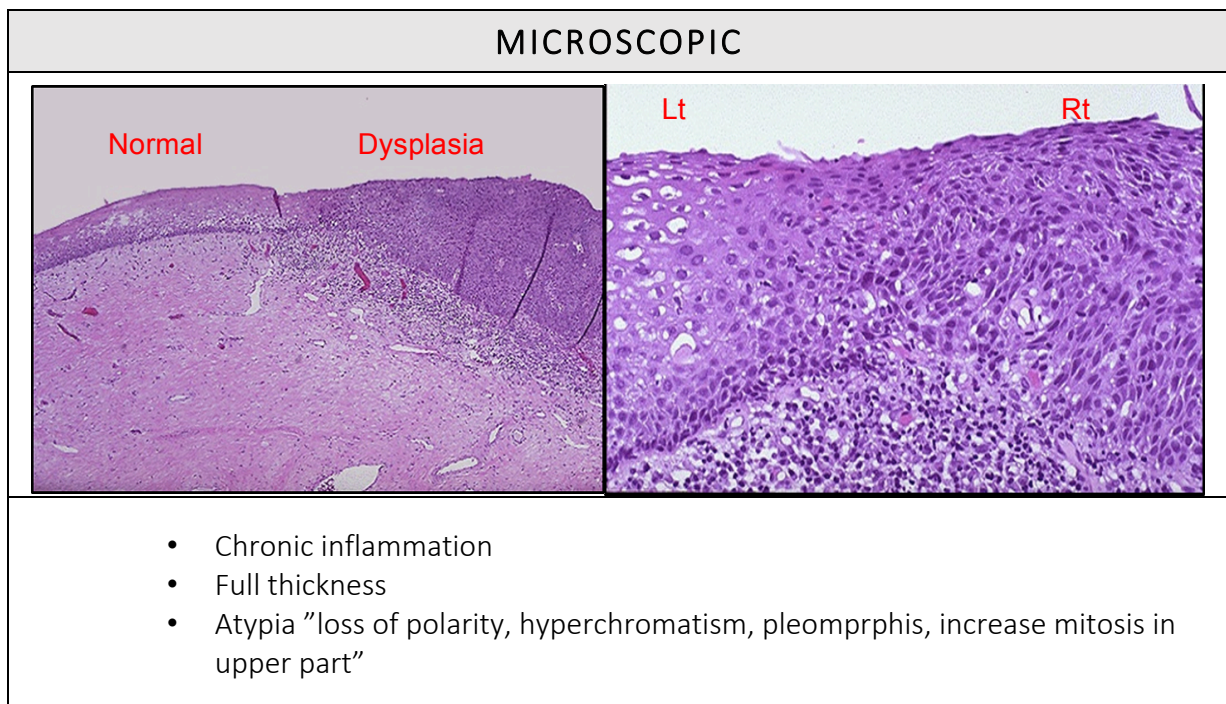
Etiology: HPV infection ⇒ Squamous Metaplasia in squamocolumnar junction ⇒ Dysplasia ⇒ Carcinoma

Risk factors:

1. HPV infection "16,18,31,33,35 Serotypes" ,
2. Early age at first intercourse,
3. Multiple sexual partners ,smoking

Treatment

- 1- Either only cytology screening pap test every 3 yrs
- 2- Or co-testing (cytology screening pap test+DNA in-situ hybridization HPV test) every 5yrs



Cervical squamous cell carcinoma “NOT important”

Definition: Most common cervical cancer.

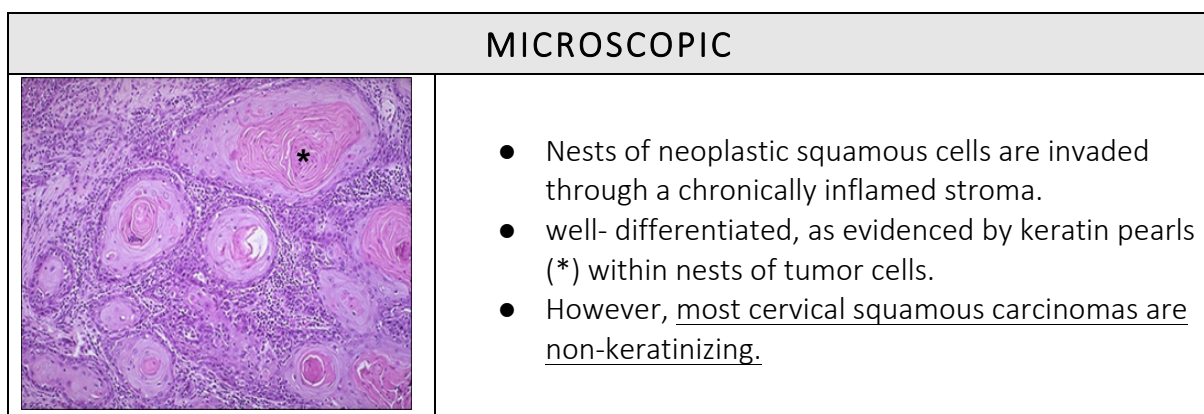
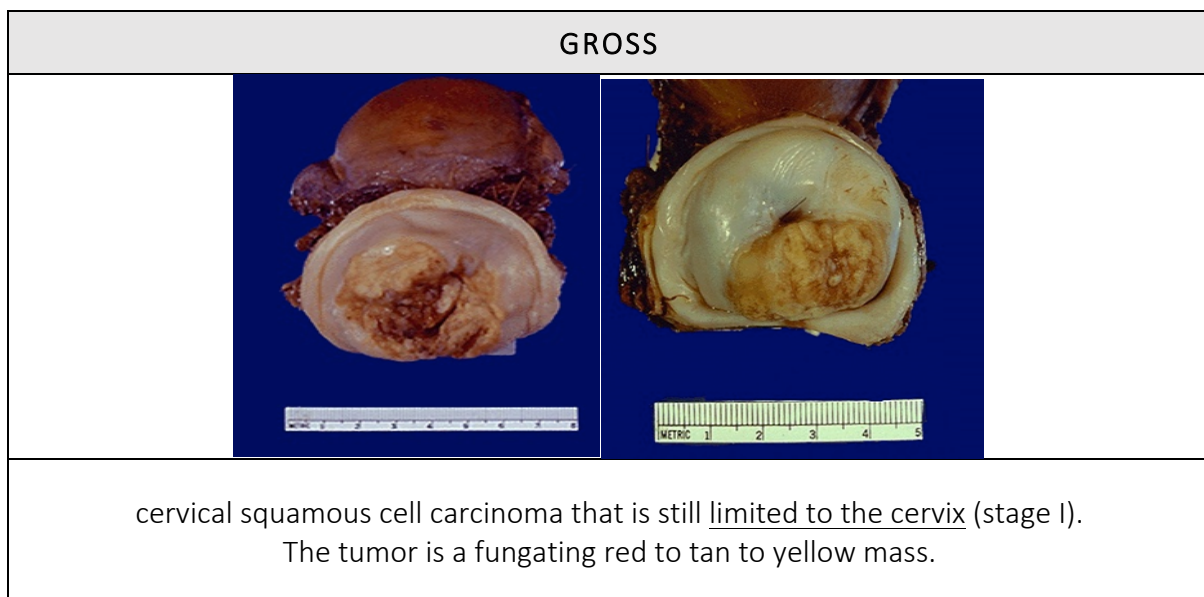
Clinical presentations:

- The early stages ⇒ may be completely asymptomatic.
- In late stage ⇒ Vaginal bleeding, cervical mass, dyspareunia.

Incidence: more common in middle-aged women (45 years+/- 10 yrs).

Complications: advanced disease ⇒ may metastasize (abdomen, lungs)

Treatment: laser or cone biopsy, Simple hysterectomy, Radical hysterectomy, Adjunct chemotherapy and radiotherapy



Acute salpingitis Ovaris "NOT important"


Definition: is an inflammation in the fallopian tubes

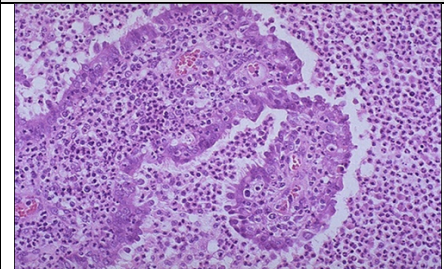
Clinical presentations: fever, lower abdominal or pelvic pain, and pelvic masses

Etiology: most often *N. gonorrhoeae*, various anaerobic bacteria, *C. trachomatis*, strep- tococci, and other pyogenic organisms

Complications: pyosalpinx, hydrosalpinx, tubo-ovarian abscess

Treatment: antibiotics, painkillers, increased fluids, and bedrest

GROSS	
	Acute salpingitis : Excised congested swollen fallopian tube with hemorrhagic patches

MICROSCOPIC	
	Collection of neutrophils within the epithelial lining.

Serous Cystadenoma of the Ovary **“Very Important”**



Definition: Commonly large, single simple cystic and thin-walled, and unilocular. They are lined by serous cells and contain thin, clear yellow fluid, often bilateral.

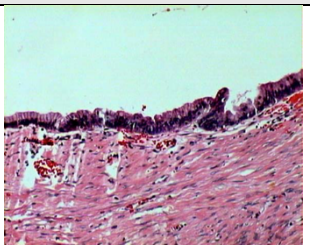
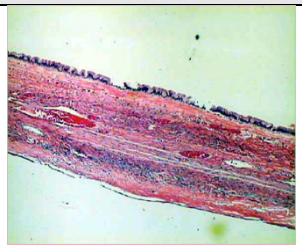
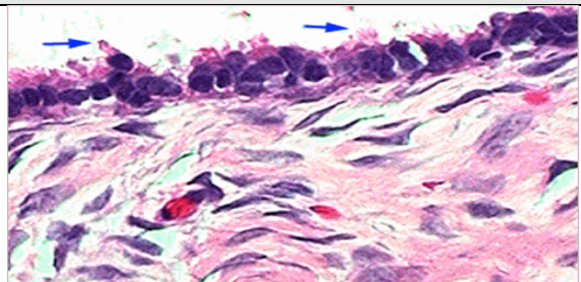
Clinical presentations: Usually cystic filled with clear serous fluid.

Incidence: most commonly seen in premenopausal women (30-40)

Related genes: Mutation of BRCA1 increased the risk for development of serous tumors.

- **Krukenberg tumor is a metastatic mucinous tumor that involves both ovaries; most commonly due to metastatic gastric carcinoma.**
- **Commonly bilateral** “ يعني إذا وحده جت المستشفى واكتشفوا ان عندها سيست في واحد من المبايض وش تتوقع الدكتور أول شيء يسويه؟ أول شيء يسويه يفحص المبيض الثاني ”
- **Prognosis: benign with good prognosis**

GROSS	
	
Large thin wall simple cyst with congested outer surface	Benign follicular cyst with thin wall. If it ruptures, it can cause abdominal pain.

MICROSCOPIC		
		
High power focus	low power focus	
<ul style="list-style-type: none"> • Simple one layer serous columnar epithelial lining. • ovarian stroma 		<ul style="list-style-type: none"> • The blue arrows point to cilia. • The cells have dark nuclei without nucleoli or mitoses. • The cytoplasm is eosinophilic and ciliated like tubal epithelium. • The stroma contains spindly fibroblasts

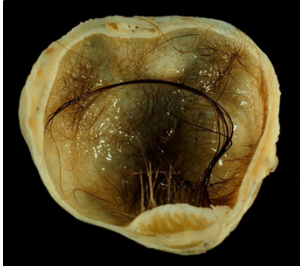

Dermoid Cyst (Teratoma) of the Ovary "NOT important"

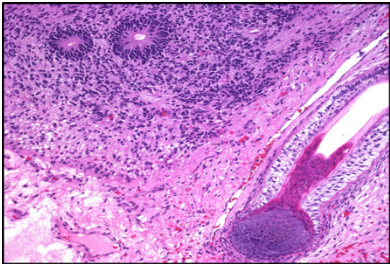
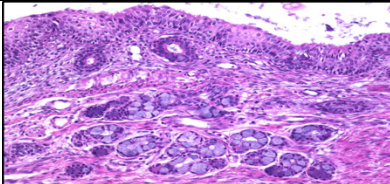
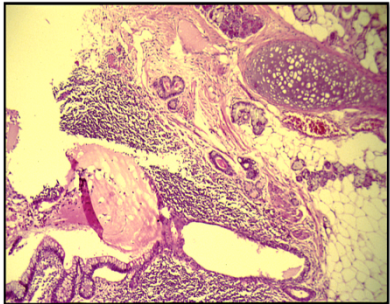
Definition: Benign tumors composed mature elements such as ectoderm, endoderm and mesoderm

Clinical presentations: Cystic tumor filled with sebaceous material and hair and occasionally teeth .

Incidence: Occurs during reproductive years composed

Complications: torsion , Rupture, Infection, struma ovarii and immature teratoma.

GROSS	
	
<ul style="list-style-type: none"> • dermoid cyst filled with greasy material (keratin and sebaceous secretions) • Tufts of hair • Rokitansky's protruberance (The rounded solid area at the bottom) 	<p>cyst containing teeth and hairs with nail tissue and skin</p>

MICROSCOPIC	
<p>Ovarian teratoma showing:</p> <ul style="list-style-type: none"> • neuroepithelial tubules and rosettes (immature component) adjacent to a hair follicle (mature component). • They consist of epidermis, hair follicles, sweat and sebaceous glands and neuroectodermal derivatives 	
<ul style="list-style-type: none"> • skin and mucinous glands in • a mature solid teratoma of the ovary 	
<p>Stratified squamous epithelium with underlying structures from other germ layers such as: brain tissue containing neurons and glial cells, sebaceous glands, hair follicles, columnar ciliated epithelium, bone and cartilage ,lymphoid tissue and smooth muscle</p>	

Fibroadenoma of the breast


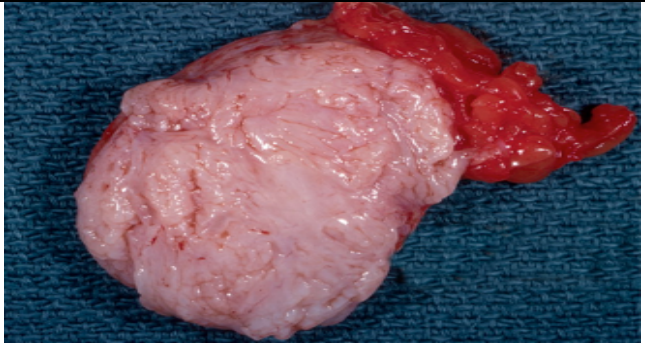
Definition: The most common benign tumor of the female breast with good prognosis

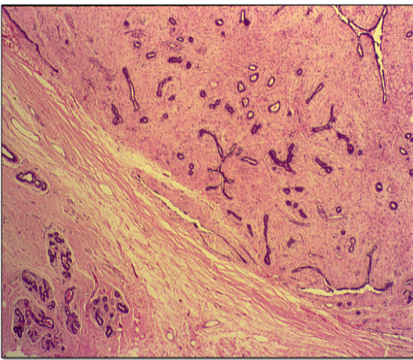
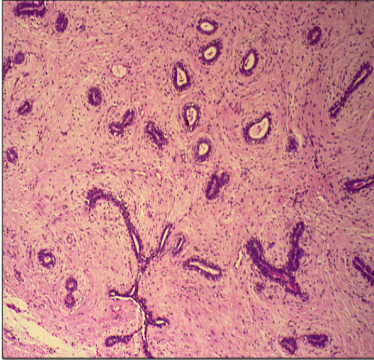
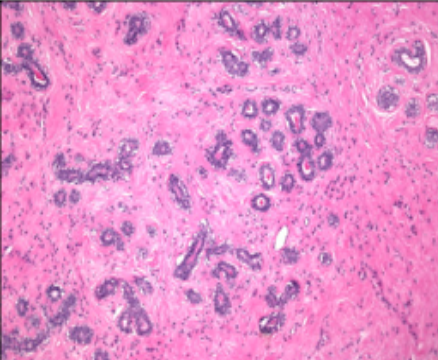
Clinical presentations: 1-increase in size during pregnancy 2-top growing & regress after menopause.

Incidence: most common before age 30.

Risk factors: women who receive cyclosporine after renal transplantation.

Treatment: lumpectomy

GROSS	
	
<ul style="list-style-type: none"> • Well circumscribed fibrotic tumor • The cut surface is lobulated with slit-like spaces 	<ul style="list-style-type: none"> • Well circumscribed fibrotic tumor • The cut surface is lobulated with slit-like spaces

MICROSCOPIC		
		
<ul style="list-style-type: none"> • Proliferation of both glandular tissue and fibrous tissue • Gland lined by two layers • Slit-like lumen 		

Intraductal Carcinoma In-situ of the breast

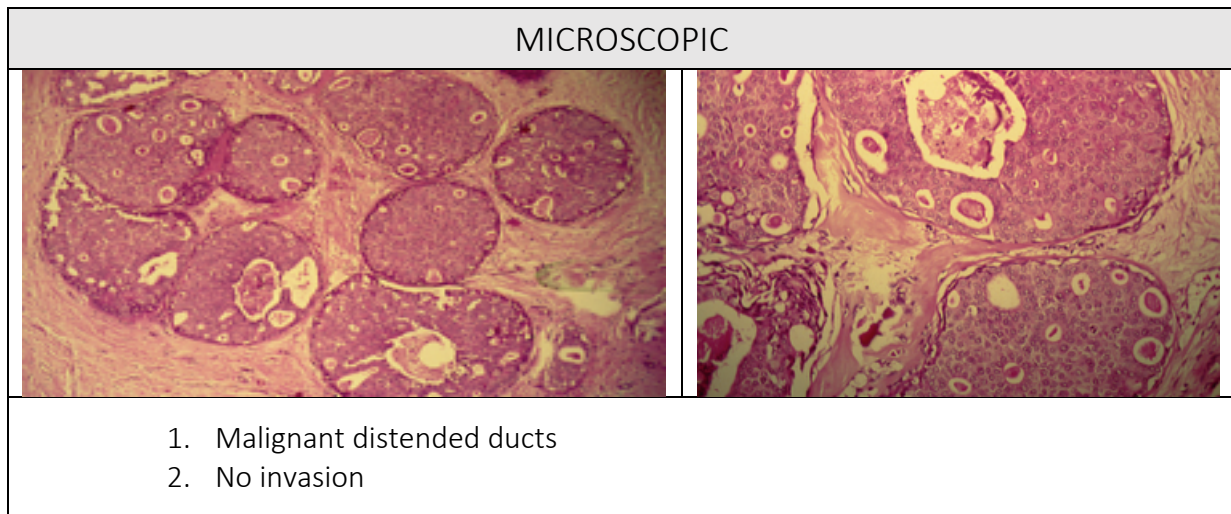
Definition: non-invasive proliferation of malignant cells within the duct system without breaching the underlying basement membrane.

Clinical presentations:

- 1- not palpable
- 2- microcalcifications in mammography

Complications: invasive carcinoma.

Treatment: Wide local excision & Mastectomy



Invasive Ductal Carcinoma of Breast **“Very Important”**

Clinical presentations: hard palpable mass is the most common presentation and dimpling of the skin, or nipple retraction.

Incidence: The commonest type of breast cancer, forming up to 80% of these cancers.

Risk factors: Estrogen exposure, genetic factors, long duration between menarche and menopause, atypical proliferative lesions, and **family history** of breast cancer in a first-degree relative, obesity, smoking, advanced aged,

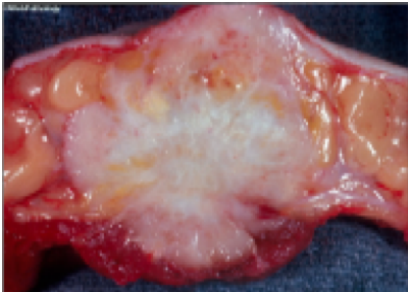


Related genes: Amplification of RAS and MYC genes also has been reported in some human breast cancers, Roughly one third of women with hereditary breast cancer have mutations in BRCA1 or BRCA2.

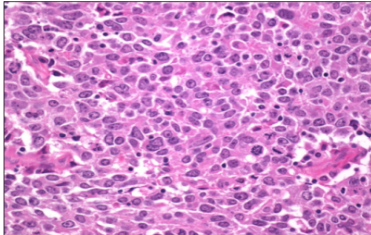
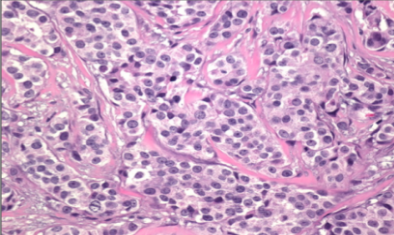
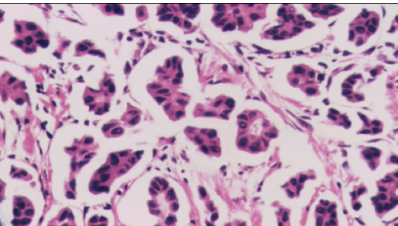
Complications: This type of cancer usually is associated with DCIS and, rarely, LCIS.

Treatment: large excisions with wide margins to reduce local recurrences

Requested lab hormones: Estrogen, Progesterone, HER2

Prognosis: depends on the size, hormones “if hormones positive good prognosis, but if it is negative bad prognosis”




GROSS		
		
<ul style="list-style-type: none"> • Irregular polycircumscribed yellow and white cut surface • Hemorrhage 	<ul style="list-style-type: none"> • lump • retraction of nipple • peau de 'orange 	<ul style="list-style-type: none"> • polycircumscribed mass • white and yellowish cut surface • retraction of nipple

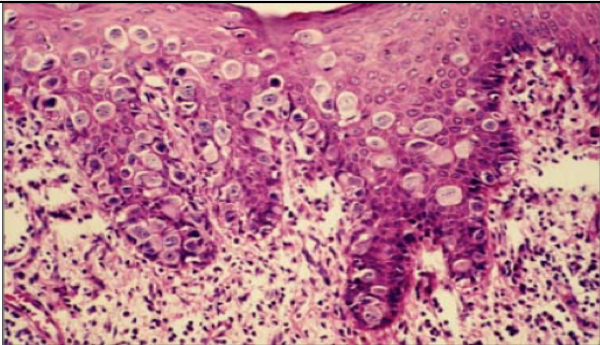
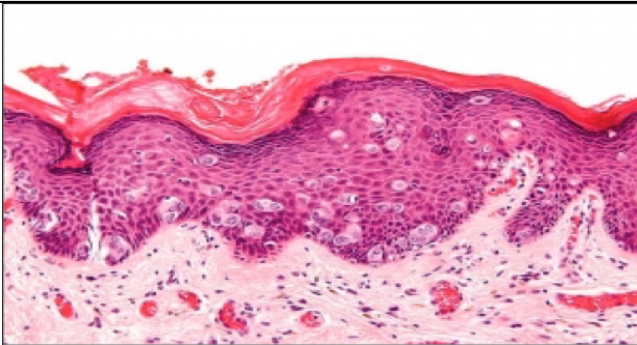
MICROSCOPIC		
		
<ul style="list-style-type: none"> ● Invasive malignant cells ● No tubules ● Prominent nucleoli, hyperchromatism, pleomorphism, and mitosis ● Abundant cytoplasm 		

Paget's Disease of the nipple "NOT important"

Definition: is a rare type of breast cancer that is characterized by a red, scaly eczematous lesion on the nipple and surrounding areola.

Clinical presentations: Appear as an eroded and weeping erythematous eruption. Pruritus is common and it might be mistaken for eczema.

GROSS		
		
<ul style="list-style-type: none"> - The lesion is eczema-like with hyperemia and erosion of the epidermis. - Initially centered on the nipple, they may later involve the areola 		

MICROSCOPIC	
	
<p>Paget's cells have pale, vacuolated cytoplasm and large nuclei and migrate through the epidermis.</p> <p>Notice the highest concentration in the deep layers of epidermis.</p>	<p>Hyperkeratosis of epidermis and chronic inflammation in the dermis are common.</p> <p>Ulceration and invasion of epidermis by ductal carcinoma cells (Paget cells).</p>