Pathology of Lower Female Genital Tract

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Vulvar diseases

***NON-NEOPLASTIC** (MORE COMMON):*

Condylomas, Lichen Simplex Chronicus, and Lichen sclerosus are all not precancerous

LICHEN SCLEROSUS
LICHEN SIMPLEX CHRONICUS
CONDYLOMA ACCUMINATUM

***NEOPLASTIC** (LESS COMMON):*

DYSPLASIA (VIN)
VULVAR CANCER

Pathology of Lower Female Genital Tract

- **Vulvar Diseases:**

- Include non-neoplastic and neoplastic diseases.
- The neoplastic diseases are much less common.
- Of the neoplastic disorders, **squamous cell carcinoma is the most common.**

Non-neoplastic Vulvar Diseases

- **Lichen sclerosus**
- **Lichen Simplex Chronicus**
- **Condyloma accuminatum**

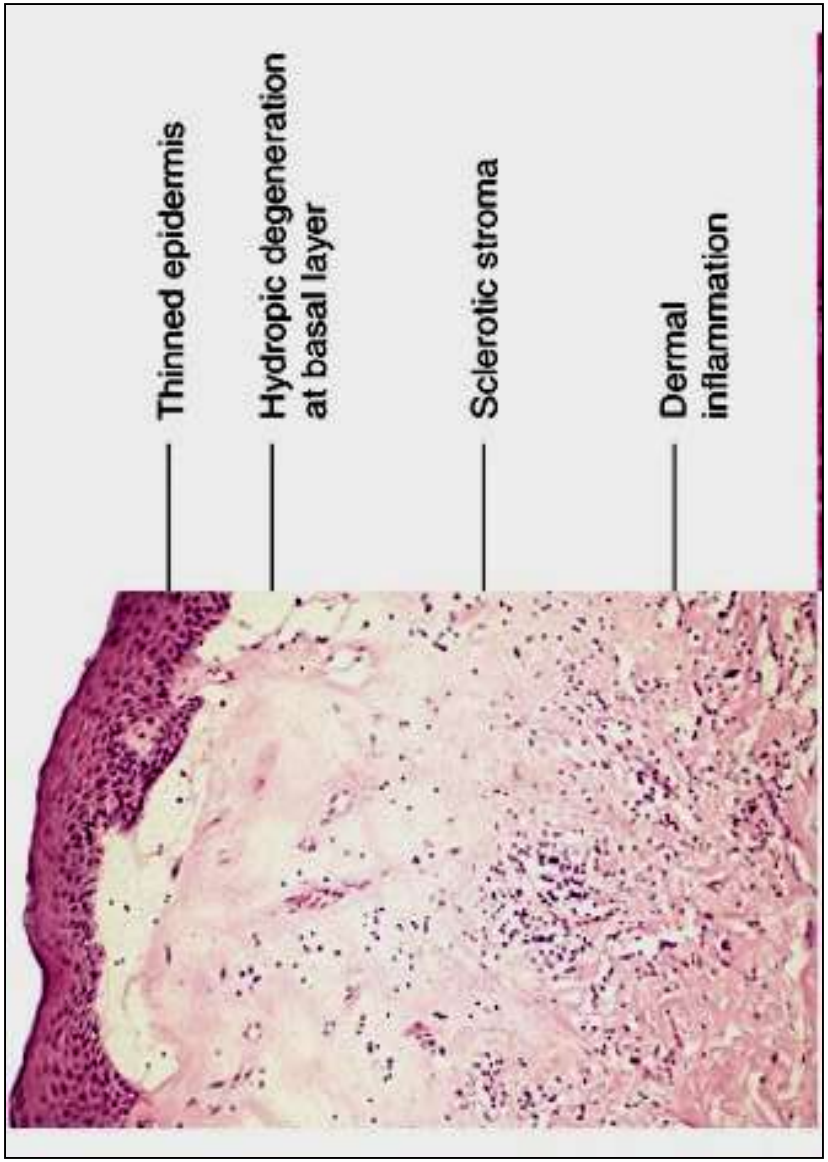
Lichen sclerosus

- **postmenopausal** women.
- white plaques; thinned out skin

- Microscopically: thinning of epidermis, disappearance of rete pegs, hydropic degeneration of basal cells

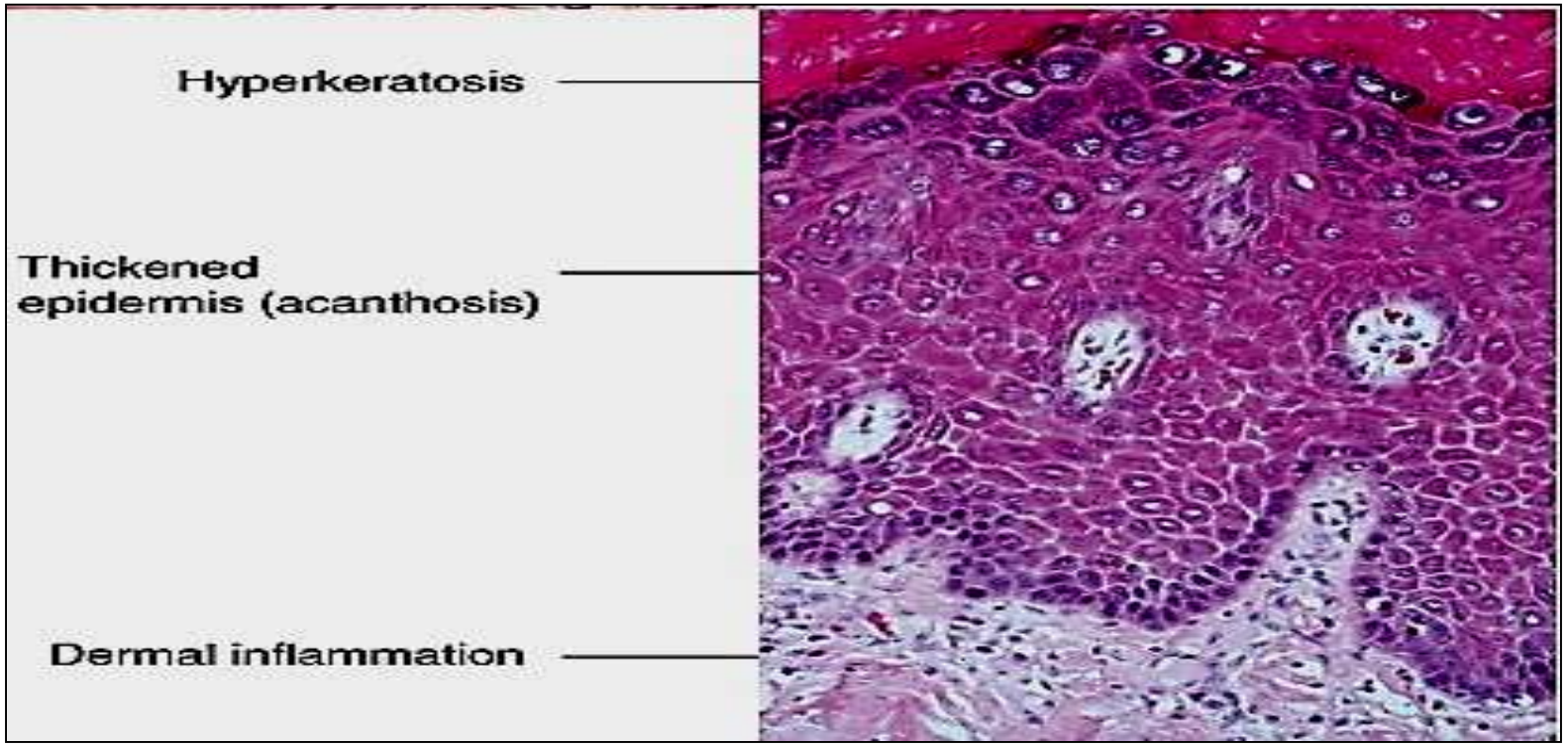
- pathogenesis: uncertain, (?)autoimmune

- is not pre-malignant by itself



Lichen Simplex Chronicus

- end result of many inflammatory conditions
- Clinical term: leukoplakia (whitish plaque)
- epithelial thickening, hyperkeratosis, epithelium shows no atypia.
- **no increased predisposition to cancer**, however, maybe present at margins of adjacent cancer.



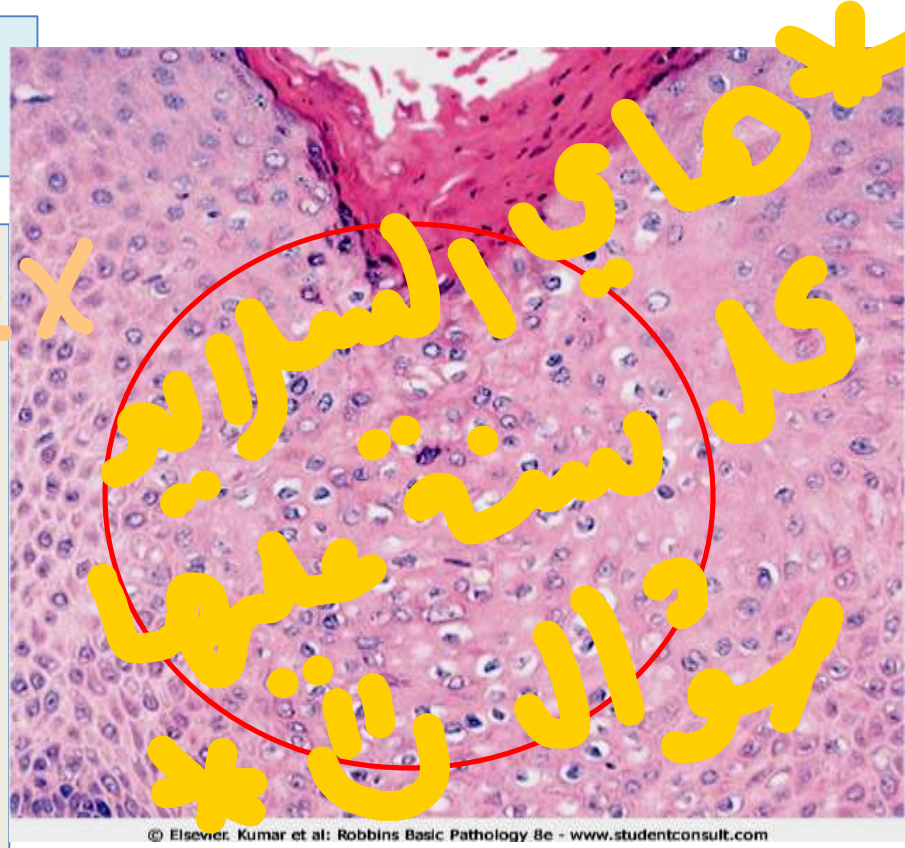
cauliflower appearance

Condylomas

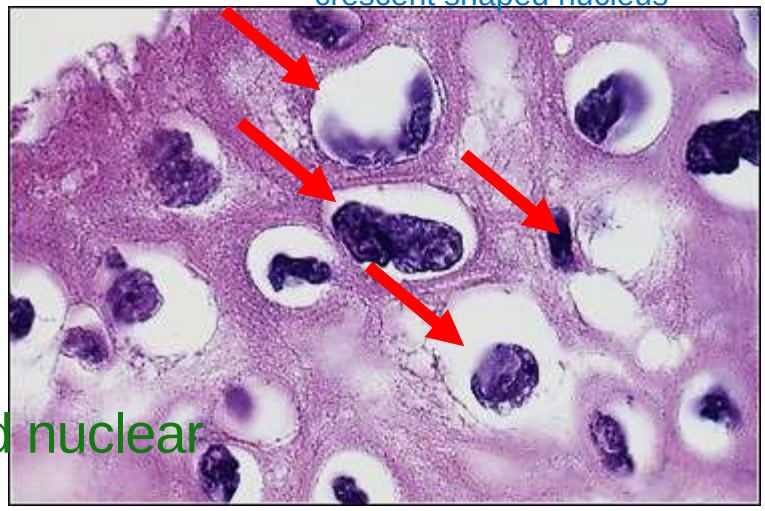
- Anogenital warts
- Infection by HPV (HPV type 6 and HPV type11, mainly)
- koilocytosis (perinuclear cytoplasmic vacuolization + nuclear pleomorphism).
- HPV types isolated from cancers differ from those found in condylomas.
- Condyloma is **not** precancerous by itself.

Low risk HPV is anogenital warts (condylomas)

more common, not pre malginant



crescent shaped nucleus



white= space = cytoplasmic and nuclear changes

Neoplastic Vulvar Diseases

1- Vulvar Intraepithelial Neoplasia (VIN)

2- Invasive Carcinoma of Vulva:

Types include:

Squamous Cell Carcinoma (most common);

adenocarcinomas; melanomas; basal cell carcinomas

melanomas are precancerous vulvar lesion

HPV & Female Genital Diseases

- A common sexually transmitted infection of genital tract.
- Many different types of HPV including low risk and high risk types (risk here is for malignancy).
- Low risk HPV → anogenital warts (condylomas)
- High risk types → intraepithelial dysplasia and invasive cancers in all parts of lower female genital tract (vulva; vagina; and cervix) as well as male genital tract.
- Condylomas are similar in all these organs.
- Intraepithelial dysplasia and invasive cancers produced by HPV are similar in pathogenesis and morphology in all these locations.

HPV & Female Genital Diseases

- high-risk HPV types (16, 18, 45, and 31) account for majority of precancerous lesions and invasive anogenital cancers
- peak age of **intraepithelial** neoplasia is about 30 years, whereas invasive cancer is about 45 years (progression to invasion needs 10-15 yr).
- HPV can be detected by molecular methods in nearly all precancerous lesions and invasive anogenital neoplasms.

latency ,progression , dysplasia

viruses may cause the formation of tumors

- **High** risk HPV (especially HPV 16 and 18) usually integrate into the host genome and express large amounts of certain viral proteins called **E6** and **E7** proteins, which block or inactivate tumor suppressor genes *p53* and *RB*, respectively → accumulation of **mutations** and DNA damage eventually leads to **malignancy**

- recently introduced **HPV vaccine** used in USA and Europe is effective in preventing HPV infections and hence cervical cancers and other anogenital HPV-related cancers.

Intraepithelial Neoplasia (IN)- concepts:

- High risk HPV causes mutations in cells
- Dysplasia is graded depending on extent of epithelial involvement:

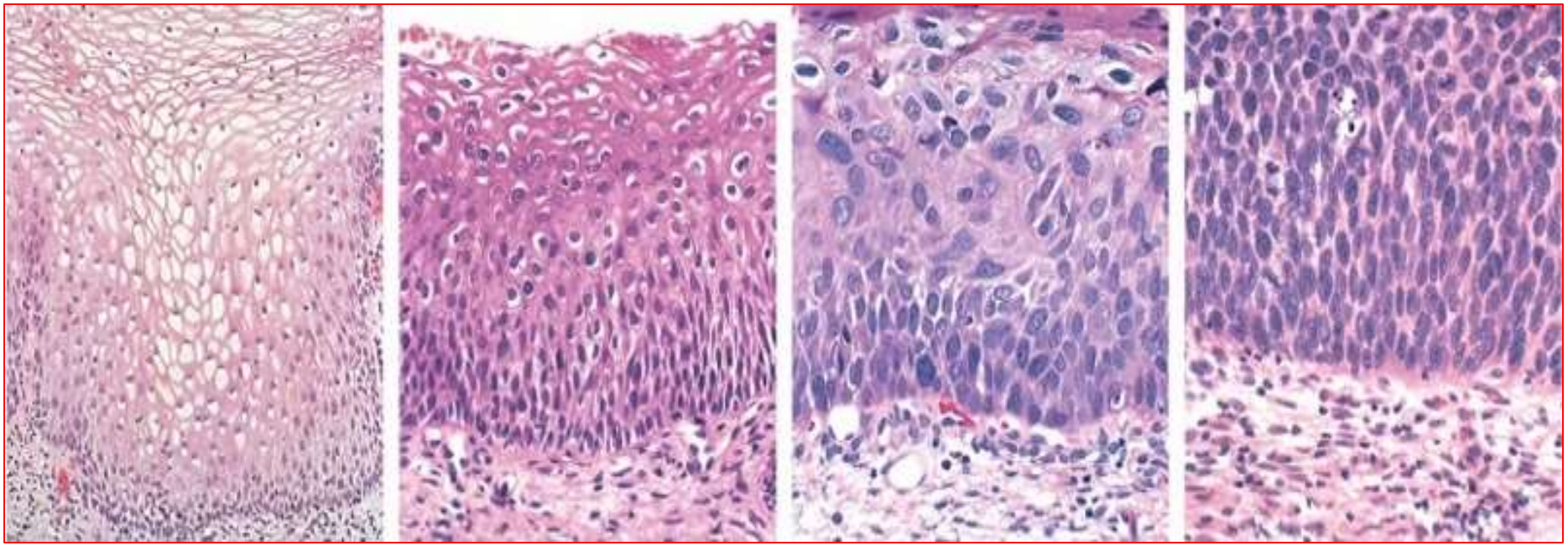
*__IN I__: Mild dysplasia (<third of full epithelial thickness)

*__IN II__: Moderate dysplasia (up to 2/3 of full epithelial thickness)

*__IN III__: Severe dysplasia in full epithelial thickness (is equivalent to **carcinoma in situ**)

Same concept and similar morphology in all lower genital tract organs.

Dysplasia = increased N/C ratio, nuclear enlargement, hyperchromasia, and abnormal nuclear membranes



Normal	IN 1	IN 2	IN 3
Vulvar dysplasia:	VIN 1	VIN 2	VIN 3
Vaginal dysplasia:	VaIN 1	VaIN 2	VaIN 3
Cervical dysplasia:	CIN 1	CIN 2	CIN 3

High-grade Intraepithelial Neoplasia and Carcinoma of Ano-genital Organs

Less common, high risk for progression to carcinoma

- high grade IN= IN II or IN III.
- IN III = carcinoma in situ
- may be multiple foci, or it may coexist with an invasive lesion.
- IN may be present for many years before progression to cancer.
- ?genetic, immunologic, environmental influences (e.g., cigarette smoking or superinfection with new strains of HPV) determine the course.

Vulvar Squamous cell carcinoma SCC

there are two biologic forms:

1- Basaloid or poorly differentiated SCC

- most common (90%)
- relatively younger
- HPV-related
- HPV lesions also in vagina and cervix.
- Poorly differentiated cells

2- Well-differentiated SCC

- Less common
- older women (60-70s).
- **Not** HPV-related
- Maybe found adjacent to lichen simplex or sclerosus
- well to moderately differentiated cells

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Most common cancer of the vulva is basaloid squamous cell carcinoma → مكرر مليونه مرة

Cervical Diseases

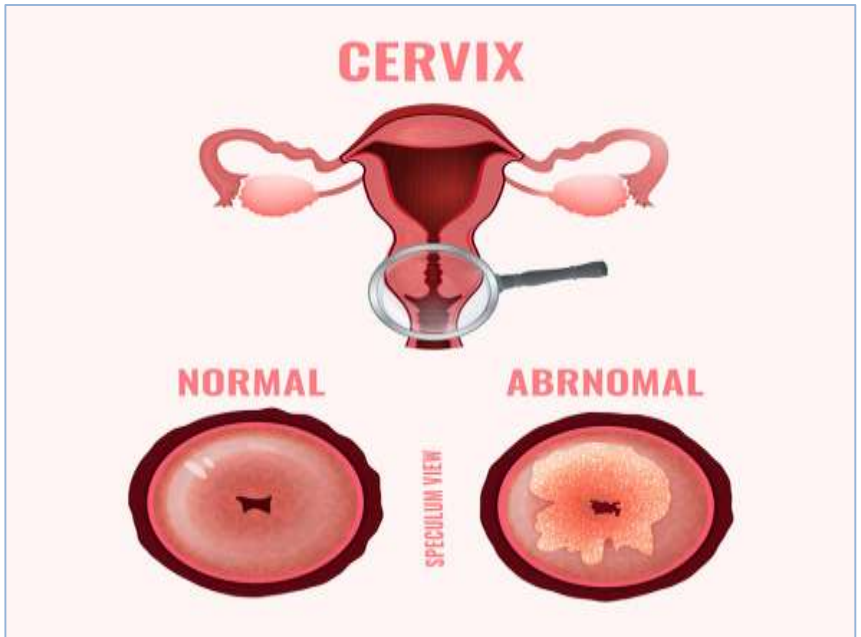
PAP SMEAR TEST

CERVICAL CANCER

Cervical Carcinoma

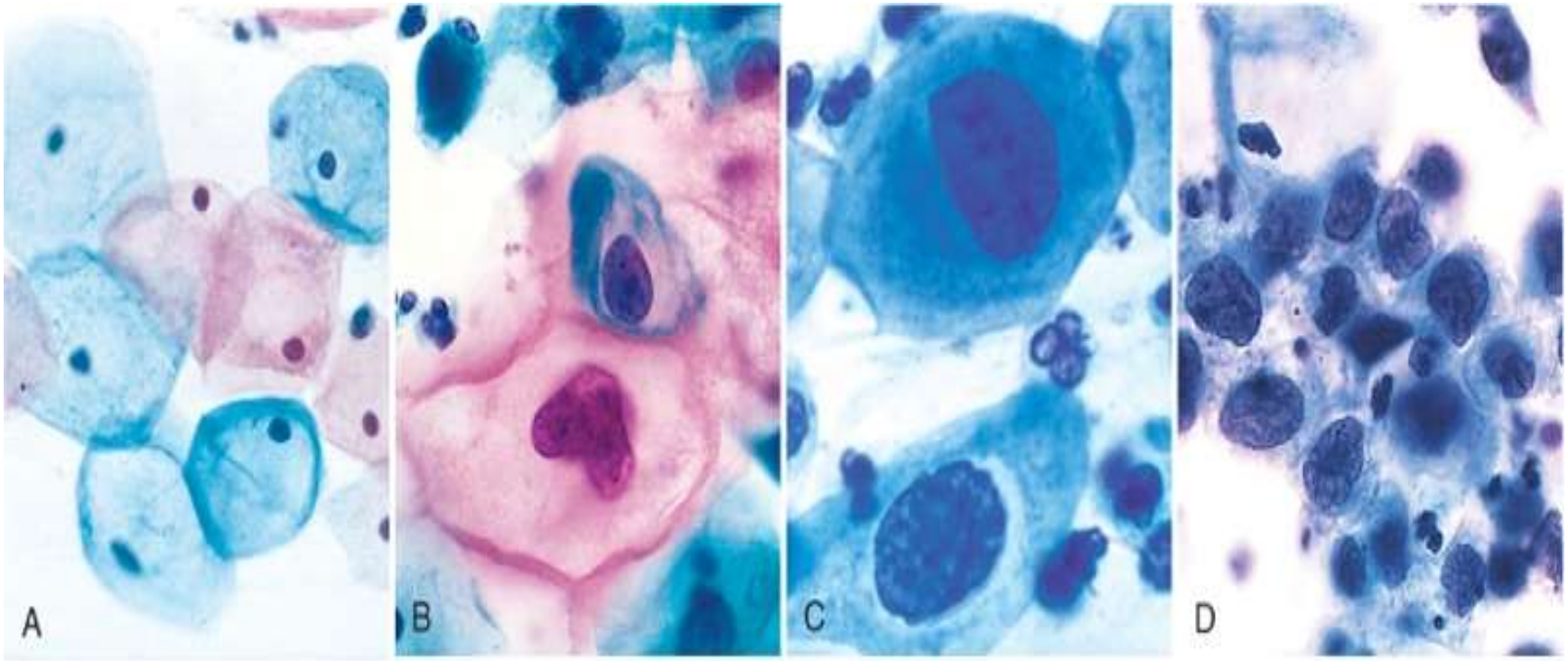
- Used to be the most frequent cancer in women
- Papanicolaou (Pap) cervical smear: a screening test for detection of HPV related lesions of the uterine cervix.
- Cervical cancer incidence dropped (early detection of pre-invasive and early cancer). It helped reduce cervical ca mortality by 99%.

searching



cervical smear

Cervical Pap smear pictures



Normal **CIN I** **CIN II** **CIN III**

- involve the full thickness of epithelium

Cervical Cancer

- Types: most common are **SCC (75%),** followed by adenocarcinomas and adenosquamous carcinomas (20%), and neuroendocrine carcinomas (<5%).

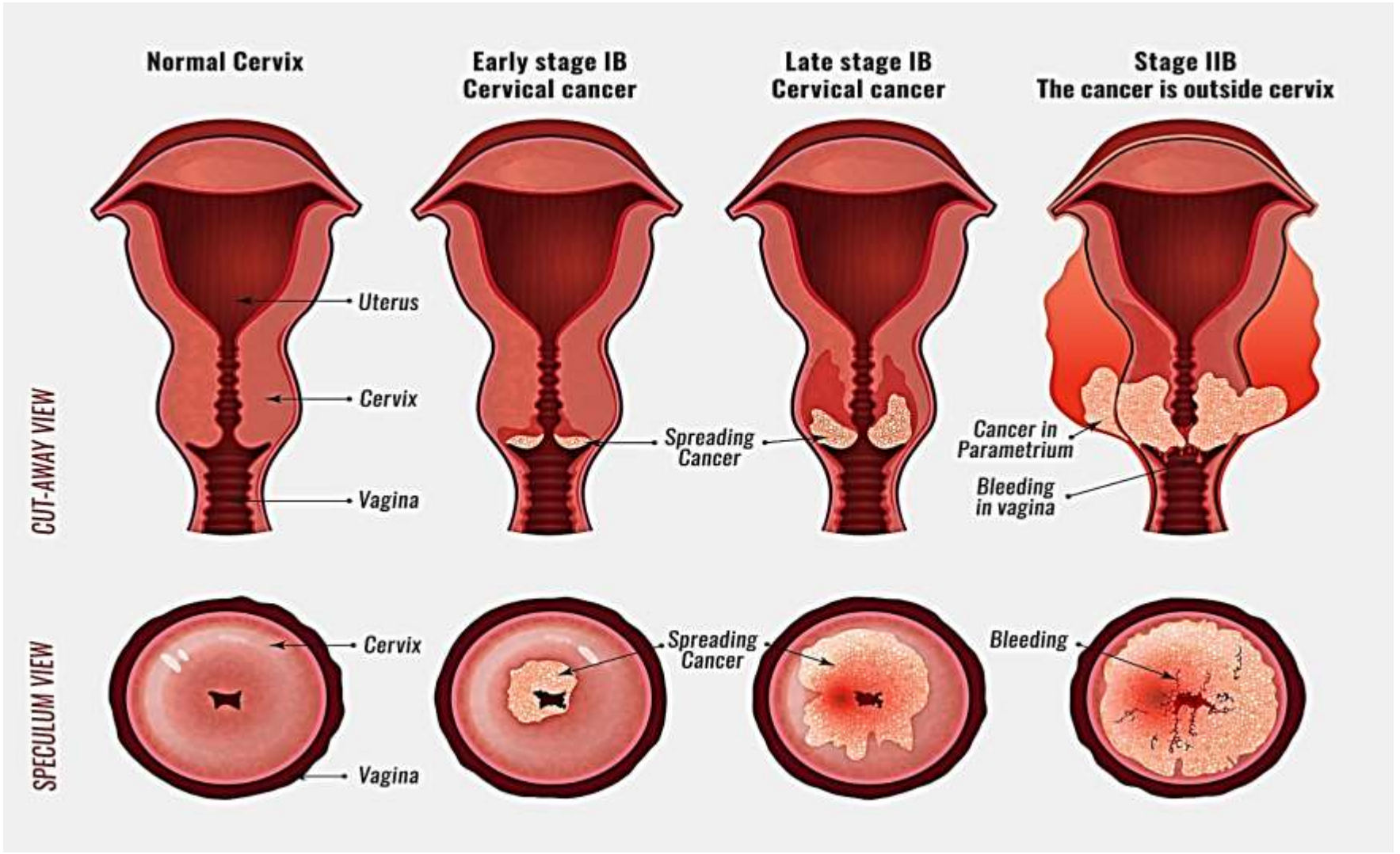
important INFO :75% of the cases were found to be Squamous cell carcinoma and less than 5% are neuroendocrinecarcinomas

- SCC now has peak incidence at 45 years, almost **10 to 15 years after detection of their precursors: cervical intraepithelial neoplasia (CIN)**

ADDITIONAL INFO :
Grading CIN depends on extent and severity of cytologic atypia

invasion and metastasis

Cervical cancer stage is one of the most important prognostic factors



Clinical Aspects of Cervical Cancers

- CIN: treatment by **laser or cone biopsy**
- Invasive cancer: surgical excision
- 5-year survival drops with increased stage:

- Pre-invasive (CIN)→ 100%;
- stage 1→ 90%;
- stage 2→82%;
- stage 3→ 35%;
- and stage 4→ 10%.

- Radiotherapy and Chemotherapy in advanced cases

Uterine Pathology

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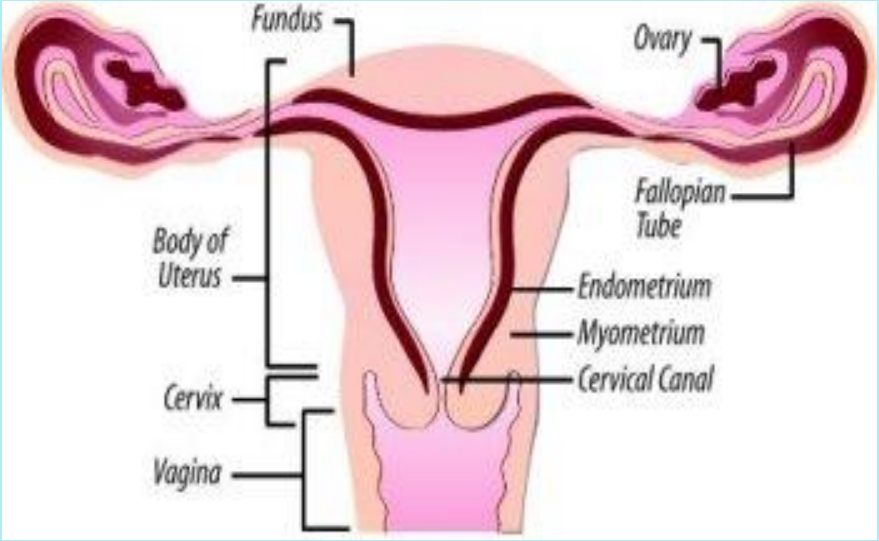
Endometrium

- Endometritis
- Adenomyosis
- Endometriosis
- Endometrial Polyps
- Endometrial Hyperplasia
- **Endometrial Carcinoma**

Myometrium

- Leiomyoma
- **Leiomyosarcoma**



ENDOMETRITIS

- Inflammation of the endometrium.
- Causes:

1- infections - pelvic inflammatory disease (PID)

2-miscarriage or delivery

3- intrauterine device (IUCD).

- acute or chronic
- fever, abdominal pain, menstrual abnormalities, infertility and ectopic pregnancy due to damage to the fallopian tubes.
- Rx: removal of cause, antibiotics, D&C.

Can occur following invasive surgery in the uterus and is not always associated with sexually transmitted infections.

Septic abortion may be followed by acute endometritis

Dilatation and curettage

ADENOMYOSIS

- endometrial stroma, glands, or both embedded in **myometrium**.
- Thick uterine wall, enlarged uterus.
- Derived from **stratum basalis** (basal layer) → **no** cyclical bleeding.
- menorrhagia, dysmenorrhea (due to enlarged uterus, uterine contractions are exaggerated)

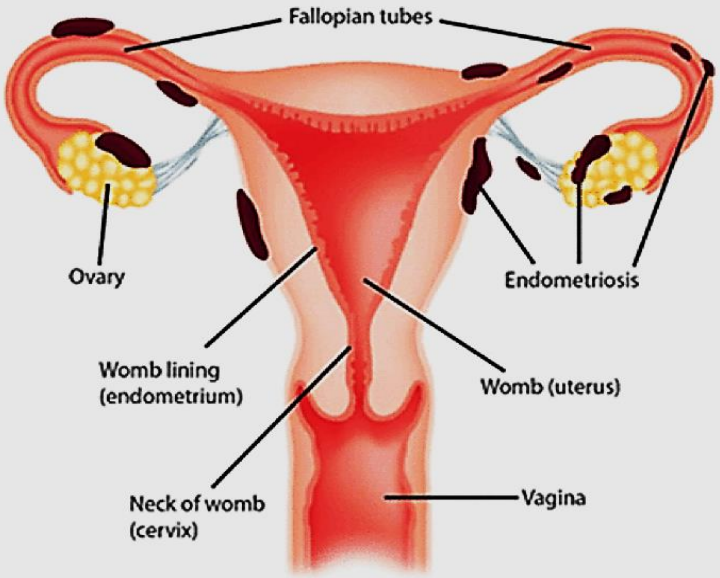
ENDOMETRIOSIS

- endometrial glands and stroma **outside the uterus (not cancer !)**.
- 10% in reproductive yrs; ↑ infertility.
- dysmenorrhea, and pelvic pain, pelvic mass filled with blood (chocolate cyst).
- Multifocal in pelvis (ovaries, pouch of Douglas, uterine ligaments, tubes, and rectovaginal septum).
- Sometimes distant sites (e.g. umbilicus, lymph nodes, lungs, ...)

Ovaries are the most common location

could be found in the gastrointestinal tract

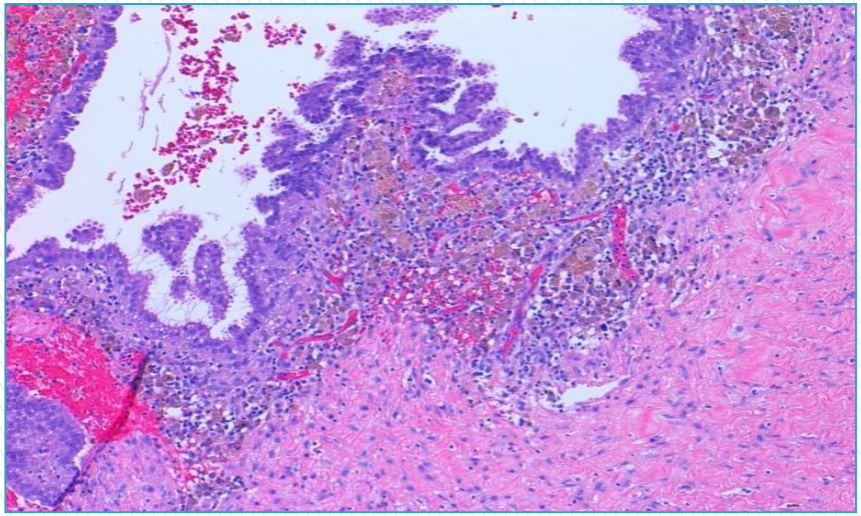
IUCD can cause it



Common locations of endometriotic lesions

"Chocolate" cyst in an ovary

Intraoperative view of endometriosis



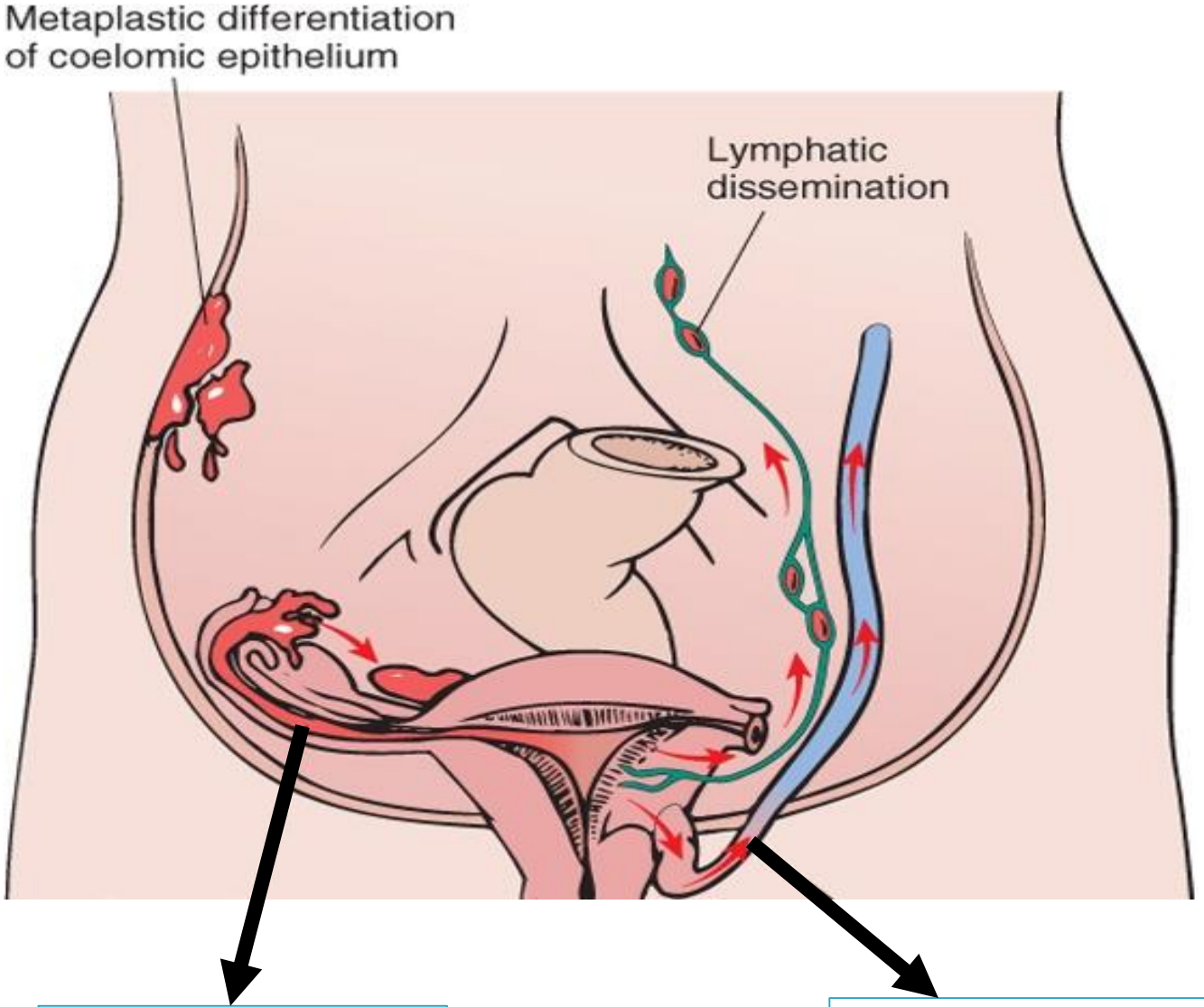
Microscopic view of endometriosis

ENDOMETRIOSIS- Pathogenesis

- 4 theories:
- ***Regurgitation theory.*** (most accepted). Menstrual backflow through tubes and implantation..
- ***Metaplastic theory*** . Endometrial differentiation of coelomic epithelium.
- ***Vascular*** **or** ***lymphatic dissemination theory.*** explain extrapelvic or intranodal implants.
- ***Extrauterine stem/progenitor cell theory***, proposes that circulating stem/progenitor cells from bone marrow differentiate into endometrial tissue

from normal tissue to another normal tissue

Conceivably, all pathways are valid in individual instances.



ENDOMETRIOSIS

- contains **functionalis endometrium**, so undergoes **cyclic bleeding**.
- Consequences: fibrosis, sealing of tubal fimbriated ends, and distortion of the ovaries.
- Diagnosis; 2 of 3 features: endometrial glands, endometrial stroma, or hemosiderin pigment.

particle representing an iron storage complex that is formed by the breakdown of hemoglobin or an abnormal metabolic pathway of ferritin

Endometrial Hyperplasia

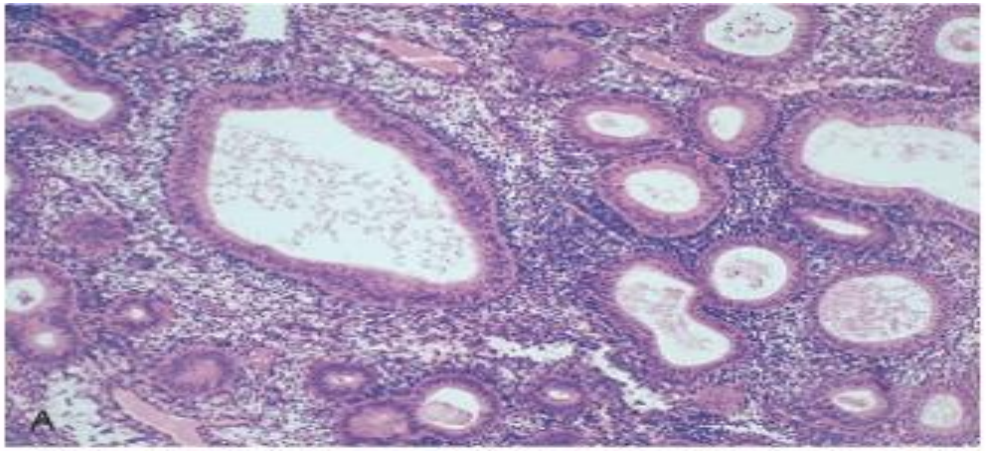
- prolonged or marked excess of **estrogen** relative to progestin →exaggerated proliferation → may progress to cancer
- risk factors: **Obesity; Diabetes; Hypertension; Infertility; Prolonged estrogen replacement therapy; Estrogen-secreting ovarian tumors**.
- severity is based on architectural crowding and cytologic atypia, ranging from:

1- typical hyperplasia

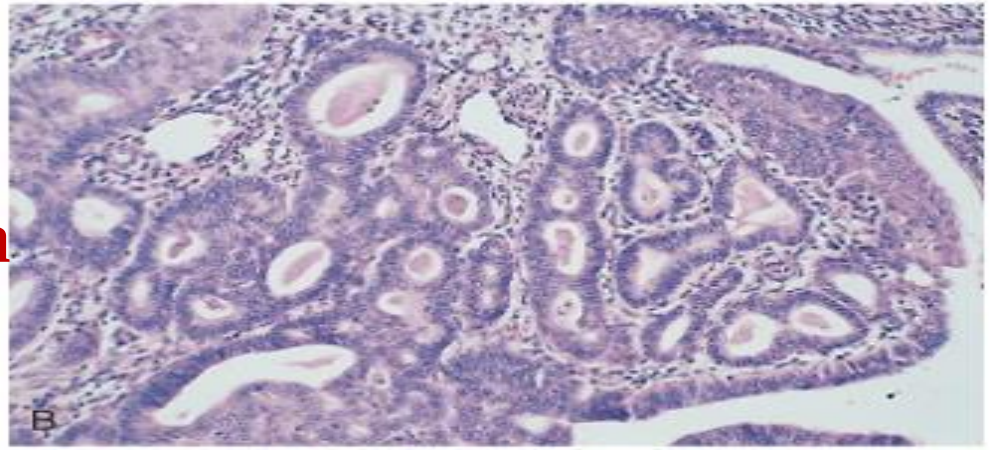
2- Atypical hyperplasia (20% risk of cancer).

highest risk to develop endometrial carcinoma

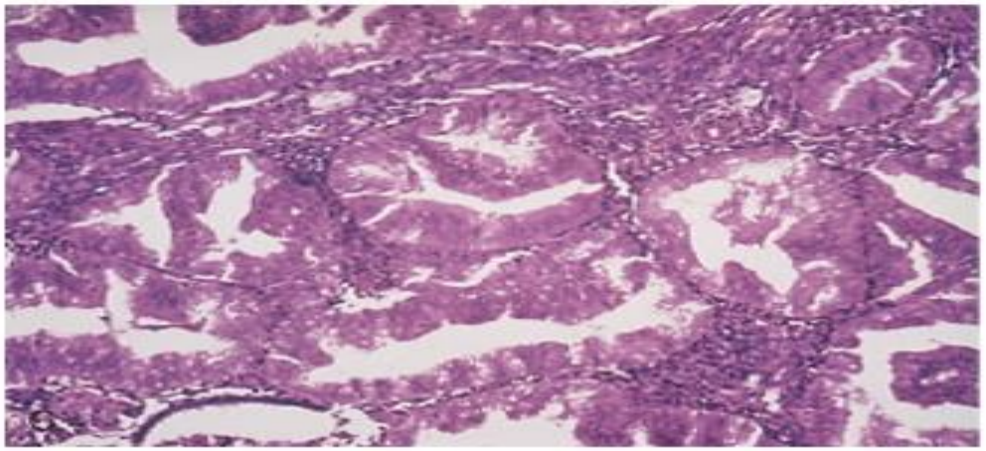
Simple hyperplasia



Complex Hyperplasia



Atypical Hyperplasia



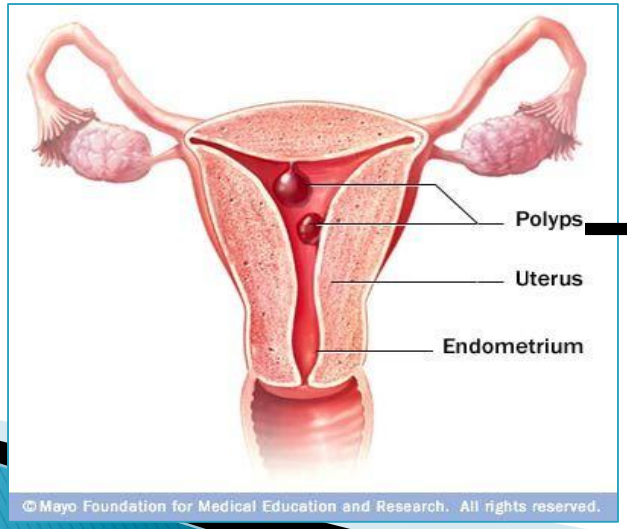
er. Kumar et al: Robbins Basic Pathology 8e - www.studentco

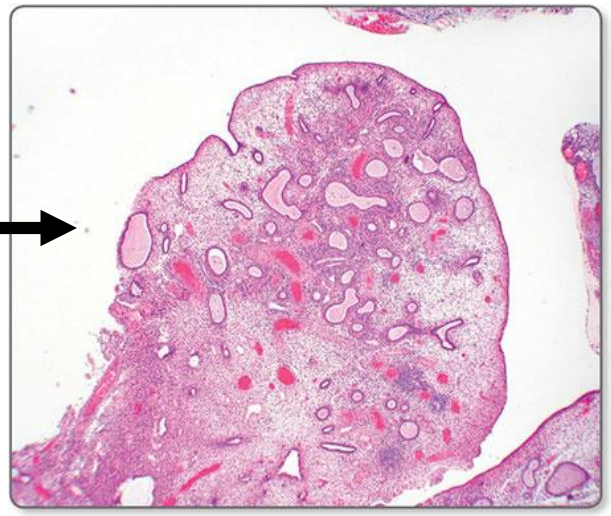
TUMORS OF THE ENDOMETRIUM

- **Benign Endometrial Polyps**

wide base narrow base

- sessile or pedunculated
- endometrial dilated glands, with small muscular arteries and fibrotic stroma.
- no risk of endometrial cancer.





Endometrial Carcinoma

- **the most common cancer in female genital tract.**
- 50s and 60s.
- two clinical settings:

1) perimenopausal women with estrogen excess
2) older women with endometrial atrophy.

- These scenarios are correlated with differences in histology:
- 1-type I cancers: prototype is called ***endometrioid***
- 2- type II cancers: prototype is ***serous carcinoma*** , respectively.

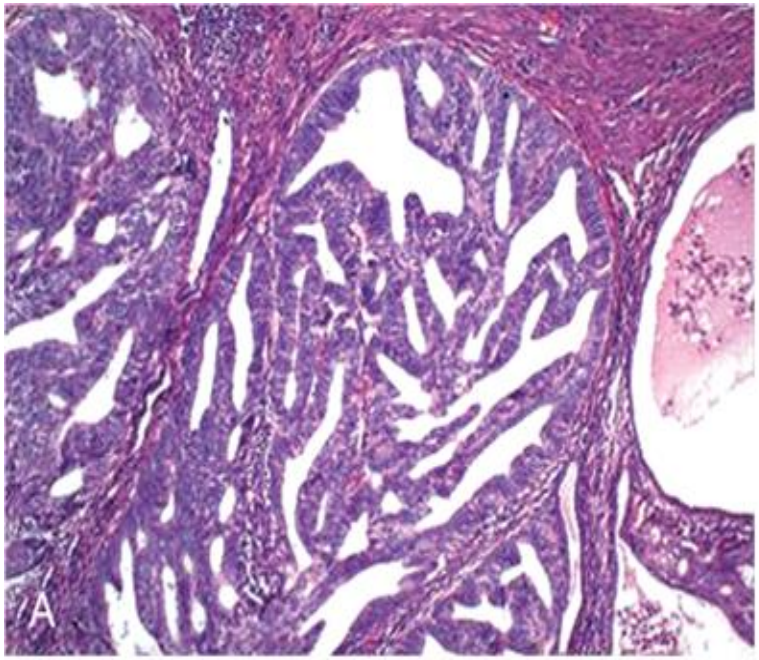
Endometrioid Carcinoma

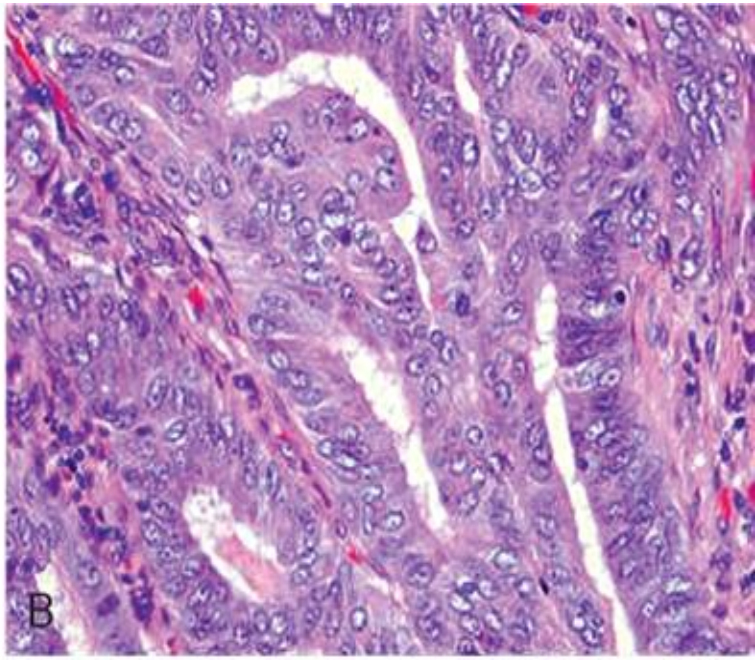
- similar to normal endometrium.
- risk factors: **Obesity; Diabetes; Hypertension**; **Infertility; Prolonged estrogen replacement therapy; Estrogen-secreting ovarian tumors**.
- ***precancerous*** *lesion is* ***atypical*** *endometrial hyperplasia*
- Mutations in DNA **mismatch repair genes** and ***PTEN***
- ***Prognosis: depends on stage. (***5-year survival in stage I= 90%; drops to 40% in stages III and IV.)

Serous Carcinoma

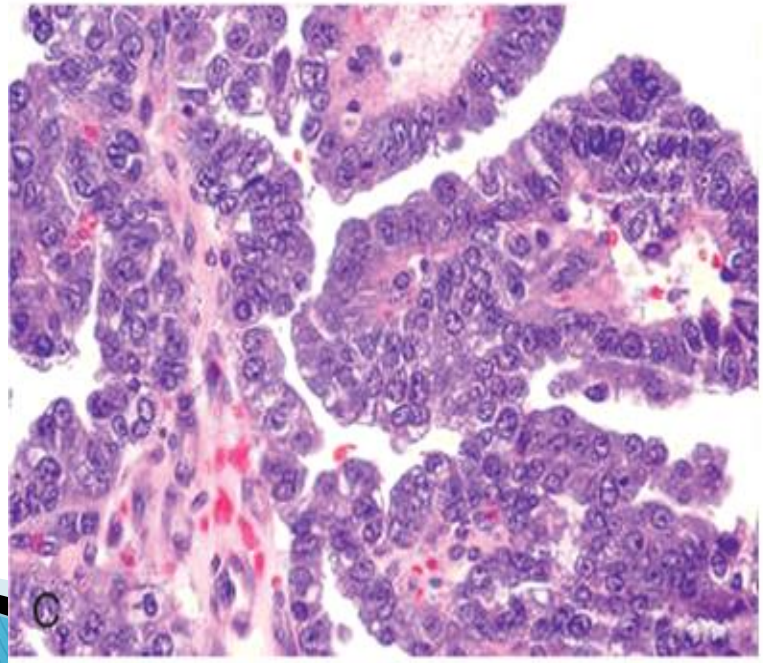
- **No relation with endometrial hyperplasia**
- **Not hormone-dependent**
- **Mutations in *p53* tumor suppressor gene**.
- Prognosis: depends on operative staging with peritoneal cytology. Generally worse than endometrioid ca.

Endometrioid carcinoma

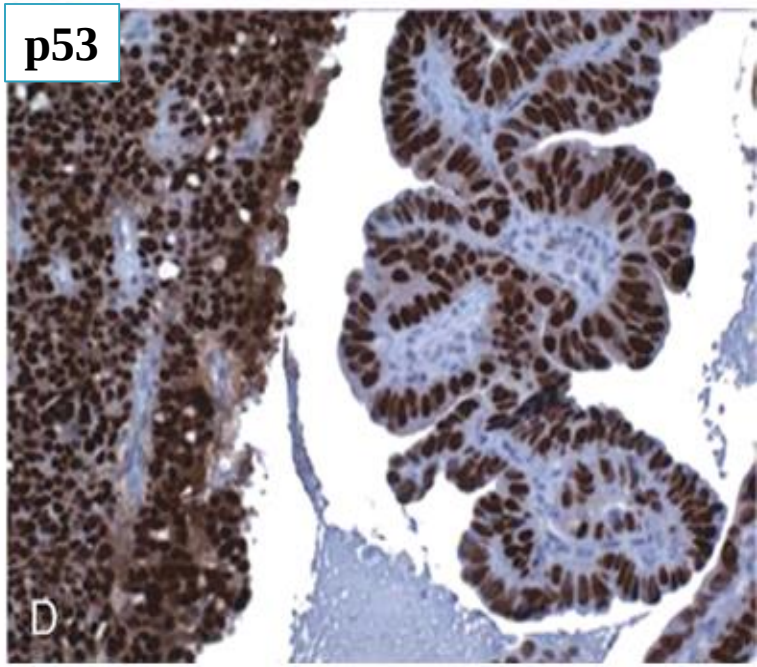




Serous carcinoma



p53



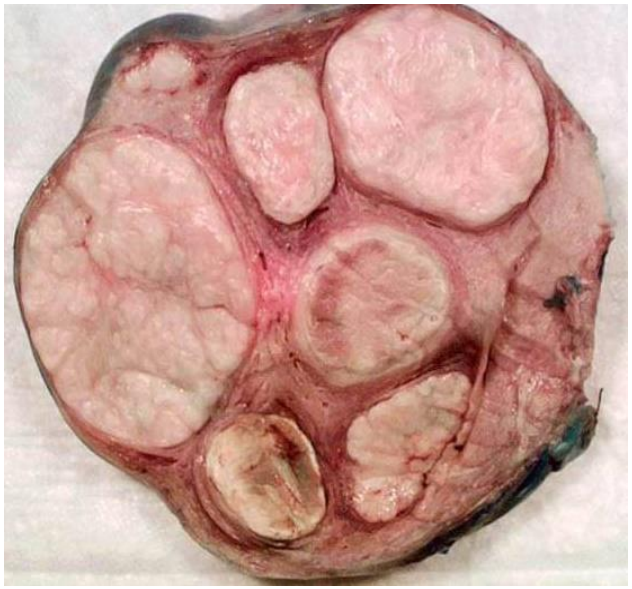
Tumors of the myometrium

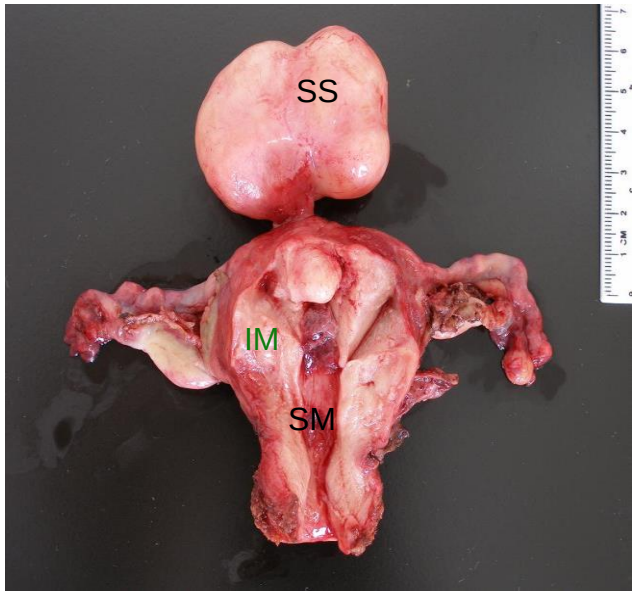
- **Lieomyoma** ***= fibroids***
- Benign tumor of smooth muscle cells
- most common benign tumor in females (30% - 50% in reproductive life).
- Estrogen-dependent; shrink after menopause.
- circumscribed, firm gray-white masses with whorled cut surface.

ADDITIONAL INFO : BRCA gene exists in
hereditary ovarian cancer
hereditary uterine cancer.
Breast cancer
hereditary fallopian cancer
Tumor suppressor gene

Leiomyomas

- Location: (intramural), (submucosal), or (subserosal).
- may develop hemorrhage, cystic change or calcification.
- Clinically: asymptomatic or symptomatic; menorrhagia; a dragging sensation, anemia, etc...
- leiomyomas almost **never** transform into sarcomas, and the presence of multiple lesions *does not* increase the risk of malignancy.

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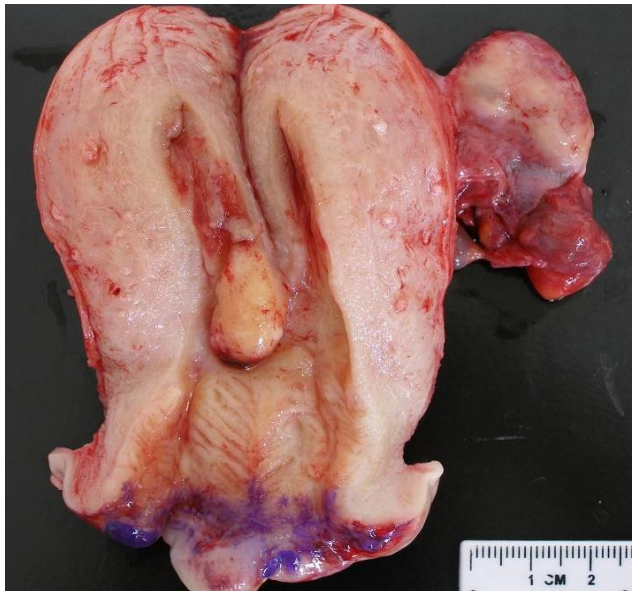
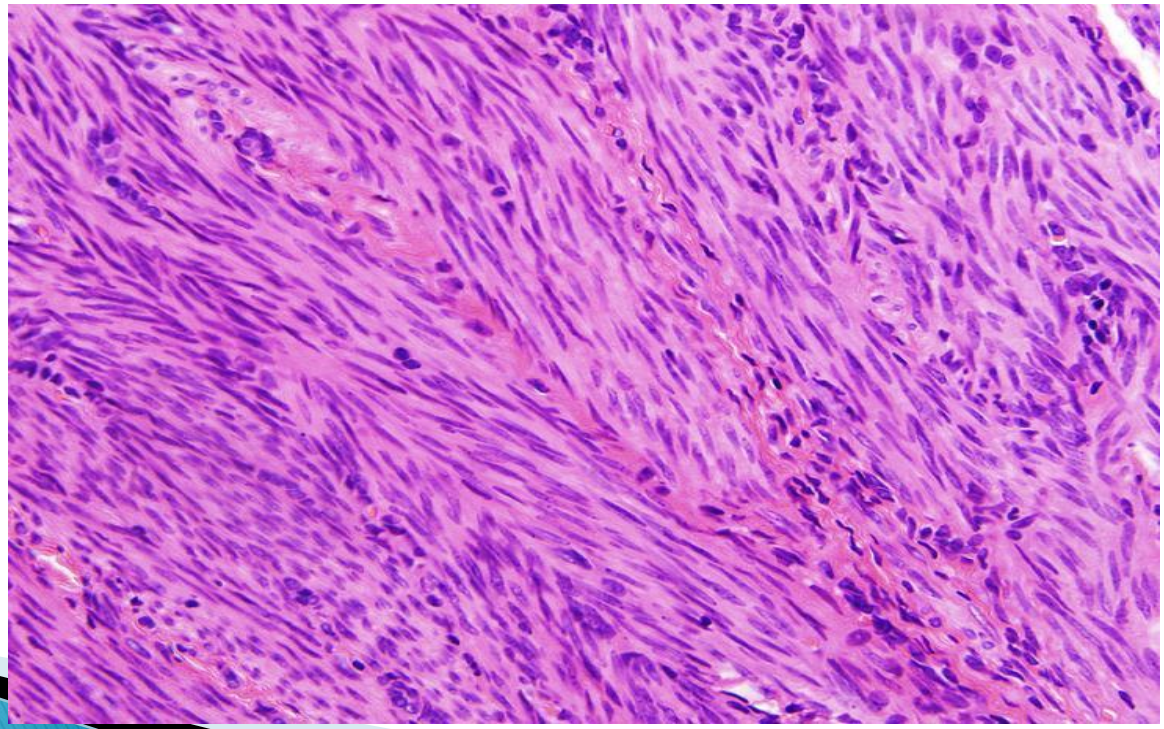
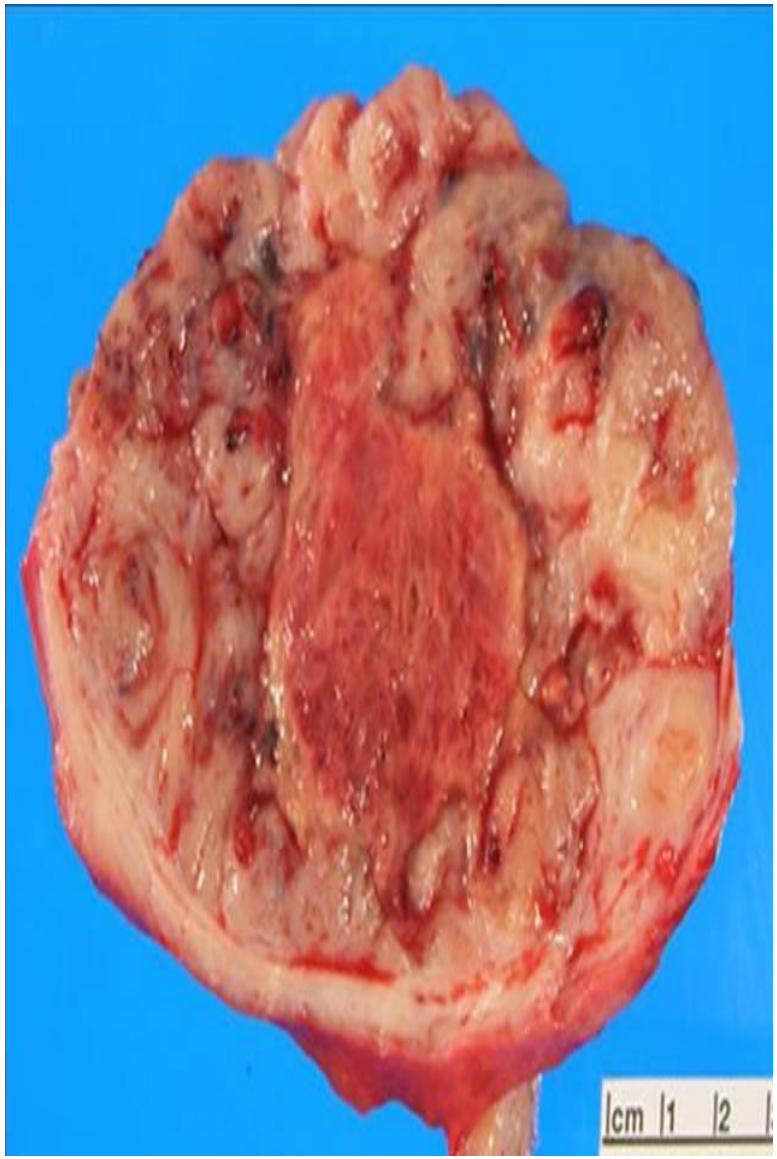




Lieomyosarcoma

- Malignant counterpart of leiomyoma.
- not from preexisting leiomyomas.
- hemorrhagic, necrotic, infiltrative borders.
- diagnosis: coagulative necrosis, cytologic atypia, and mitotic activity.
- Recurrence common, and metastasize, 5-year survival rate 40%.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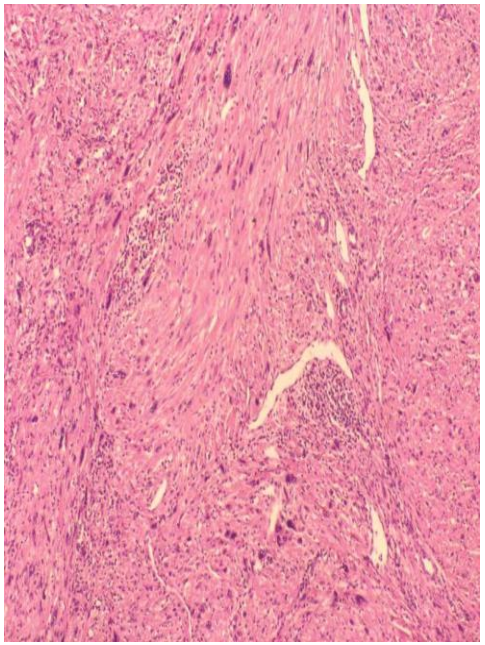

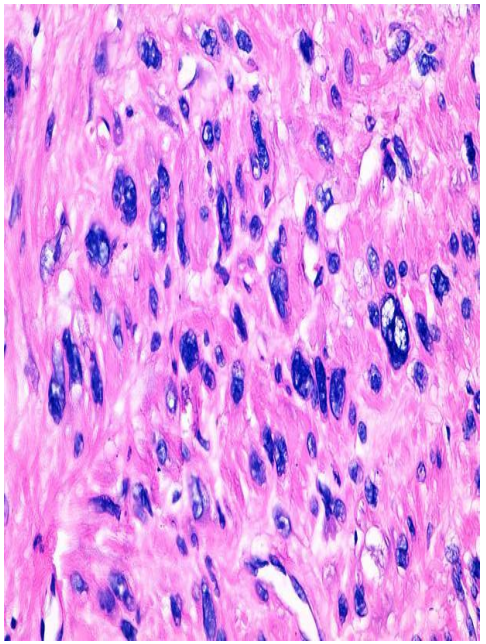

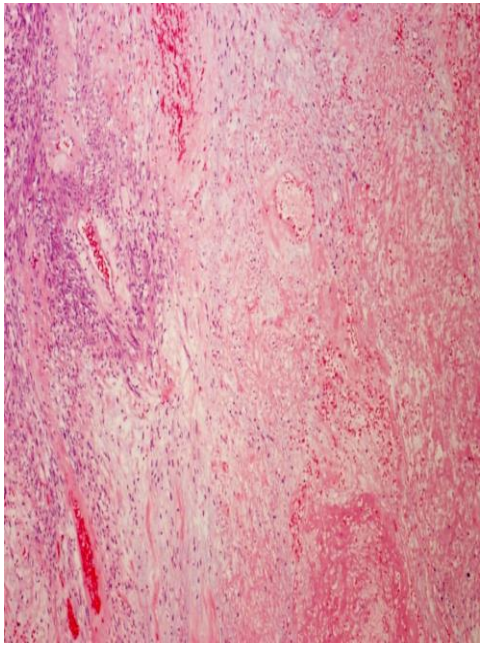

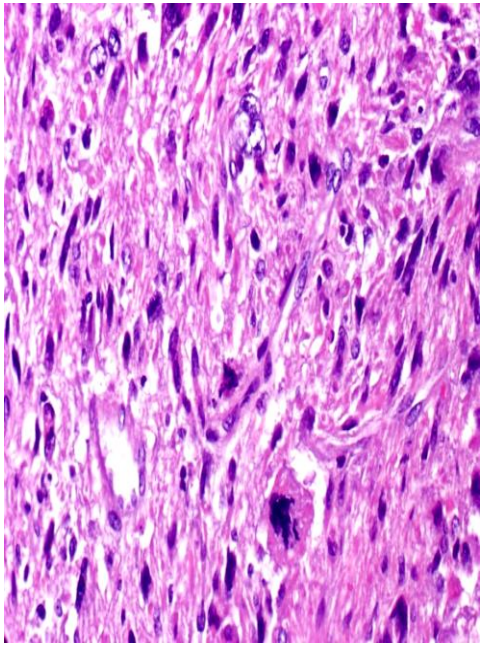

Ovarian and Fallopian Tube Pathology

ADDITIONAL INFO :
Stein-Leventhal syndrome, also called polycystic ovary syndrom

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Topics covered in this lecture:

- **Ovarian neoplasms:**
  - Classification
  - Serous tumors
  - Mucinous tumors
  - Teratomas
  - Clinical aspects
- **Fallopian tube diseases:**
  - Ectopic pregnancy
  - Tubal malignancies

tumors not necessarily malignant

Ovarian Neoplastic Diseases

- 5th most common cancer in women.
- 5th leading cause of cancer death in women.
- 3 Origins of primary ovarian tumors:

  1- epithelium

  2- germ cells

  3- sex cord/stromal cells.

  - Each of these cell types gives rise to a variety of tumors
- Secondary tumors of the ovary are metastatic malignancies that spread to the ovaries.

Epithelial Ovarian Neoplasms

- Account for the majority of ovarian tumors
- in their malignant forms, account for 90% of ovarian cancers

The most common ovarian malignant diseases are derived from Surface epithelial cells

- Previously were thought to arise from coelomic epithelium that covers the ovarian surface
- Recent studies have shown that they actually arise from the fimbriated end of fallopian tube or epithelial cysts in the cortex of ovary.

Germ cell and sex cord–stromal cell tumors

- less frequent
- constitute 20% to 30% of ovarian tumors
- collectively responsible for less than 10% of malignant tumors of the ovary (so many pf them are benign)

Ovarian Neoplasms

from inside the ovary 1°

Epithelial tumors

all are malignant

ORIGIN		GERM CELL	SEX CORD–STROMA	METASTASIS TO OVARIES
Overall frequency	65%–70%	15%–20%	5%–10%	5%
Proportion of malignant ovarian tumors	90%	3%–5%	2%–3%	5%
Age group affected	20+ years	0–25+ years	All ages	Variable
Types	• Serous tumor • Mucinous tumor • Endometrioid tumor • Clear cell tumor • Brenner tumor • Cystadenofibroma	• Teratoma • Dysgerminoma • Endodermal sinus tumor • Choriocarcinoma	• Fibroma • Granulosa-theca cell tumor • Sertoli-Leydig cell tumor	

Ovarian neoplasms - Pathogenesis:

- Risk factors:
- **nulliparity**
- **family history** (Only 10%)

- Note: OCPs may **reduce** risk.

which of the following plays a role in the sporadic or familial cases of ovarian neoplasms

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Ovarian Epithelial Neoplasms- Pathogenesis:

- Sporadic cases
- ***BRCA*** 1 and 2 mutations: 10% of sporadic cases
- ***p53*** (50%)
- **HER2/NEU** over-expression (35%)
- **K-RAS** protein over-expression (30%) (mucinous)

percentages are NOT required

- Familial cases
- **BRCA1** and **2**

SURFACE EPITHELIAL TUMORS-types:

- represents the highest proportion of malignant ovarian tumors
- The most common ovarian neoplasms are derived from surface epithelial stromal cells

- **1- Serous**
- **2- Mucinous**
- **3- Endometrioid**
- **4- Clear cell**
- **5- Brenner**

- **All types include benign, borderline, and malignant tumors**

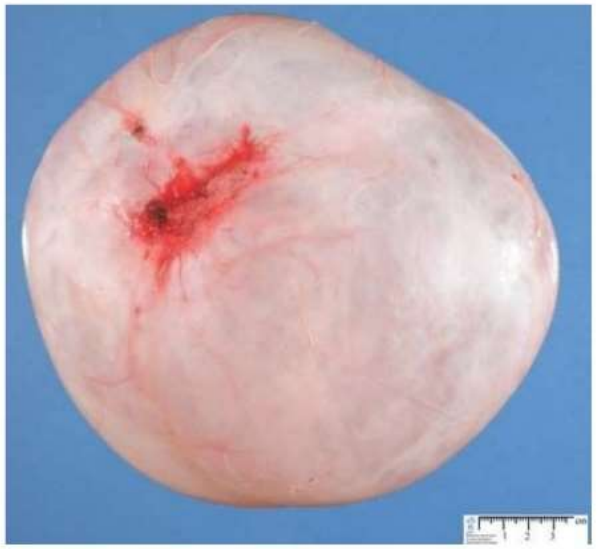
1- Serous Tumors

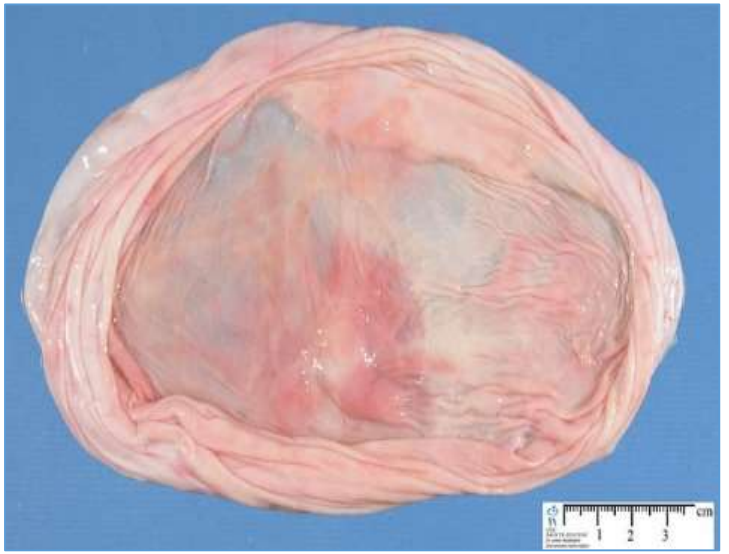
- **the most frequent ovarian tumors.**
- Include: 60% benign, 15% borderline, and 25% malignant.
- **the most common malignant ovarian tumors (60%)**
- Genetics:
- ***BRAF*** and ***K-RAS*** mutations→ borderline & low grade serous carcinomas
- ***p53*** and ***BRCA1*** mutations → High-grade serous carcinomas

Benign serous tumors: Morphology

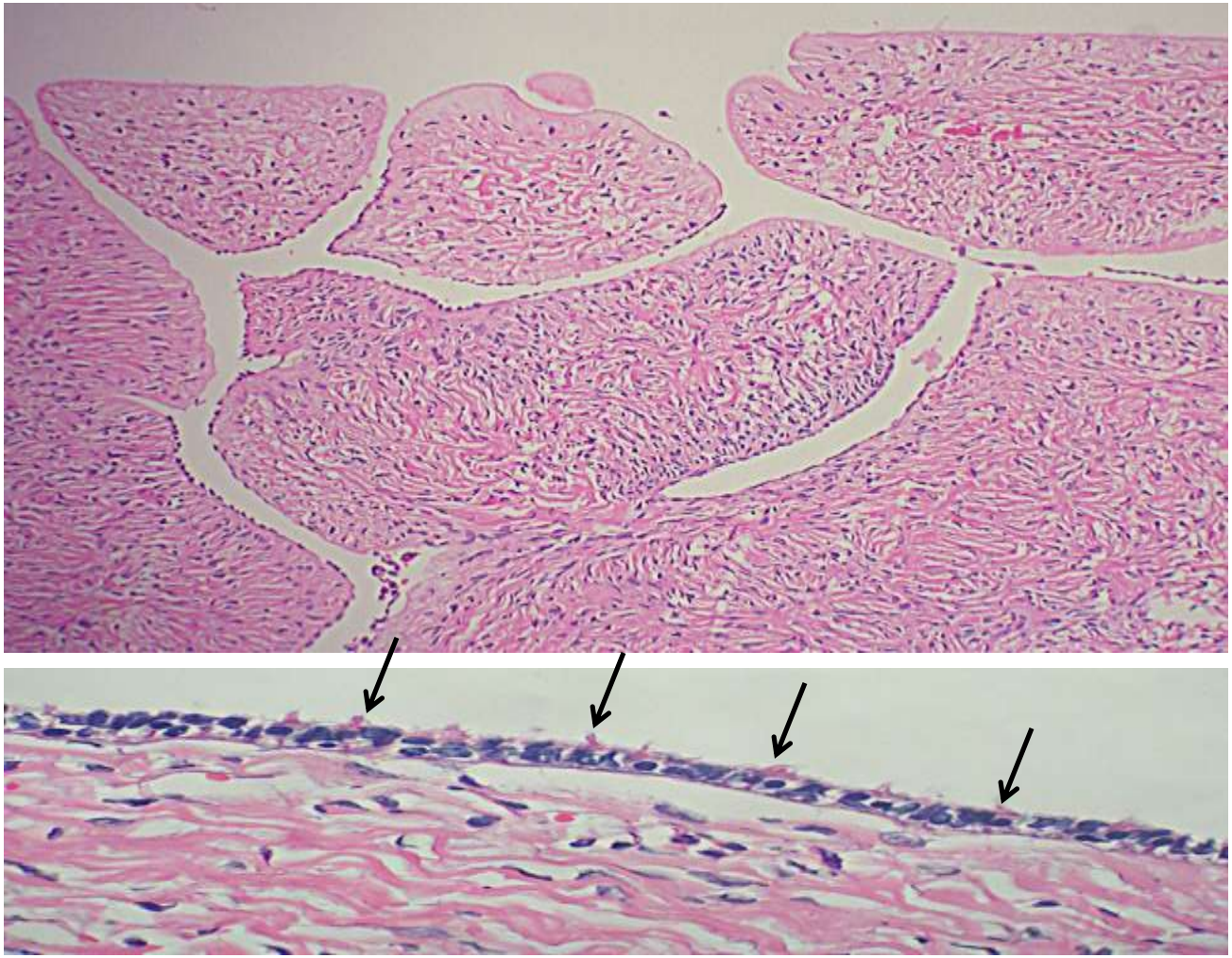
- **Benign serous tumors**:
- wall+fluid "clear"
- cystic ; large; (30 cm).
- May be bilateral.
- filled with a clear serous fluid
- **single layer** of columnar epithelium. Some cells are ciliated.
- **Psammoma bodies** (laminated calcified concretions) are common in tips of papillae of **all** serous tumors

SEROUS CYSTADENOMA



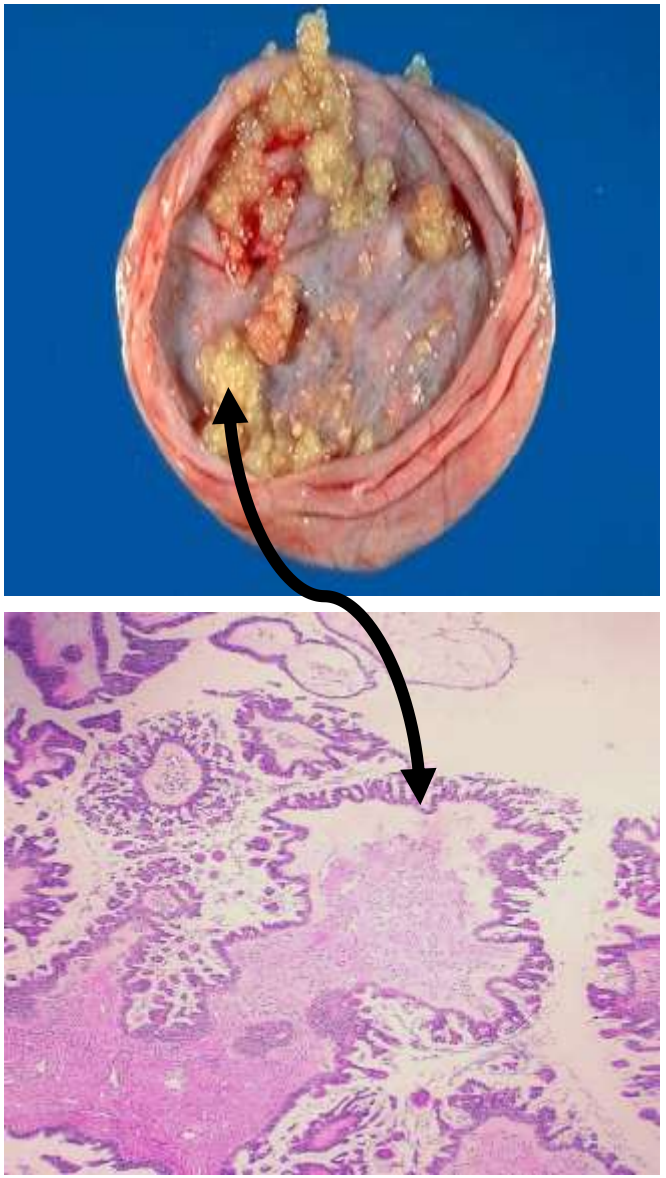


Benign serous tumors:



Borderline Serous Tumors

- **Complex architecture**
- Mild cytologic atypia
- **No** stromal invasion
- May have peritoneal implants
- can recur and some can progress to carcinoma
- Prognosis: intermediate between benign and malignant types
- (survival with peritoneal metastases 75%)



Malignant Serous Tumors-There are two types of ovarian serous carcinomas:

borderline serous carcinoma

- **low-grade serous carcinoma:**

- arise from borderline lesions

- progress slowly to become invasive carcinoma

- Differentiated morphology

- mutations in KRAS + BRAS

- **high-grade serous carcinoma:**

- develop rapidly

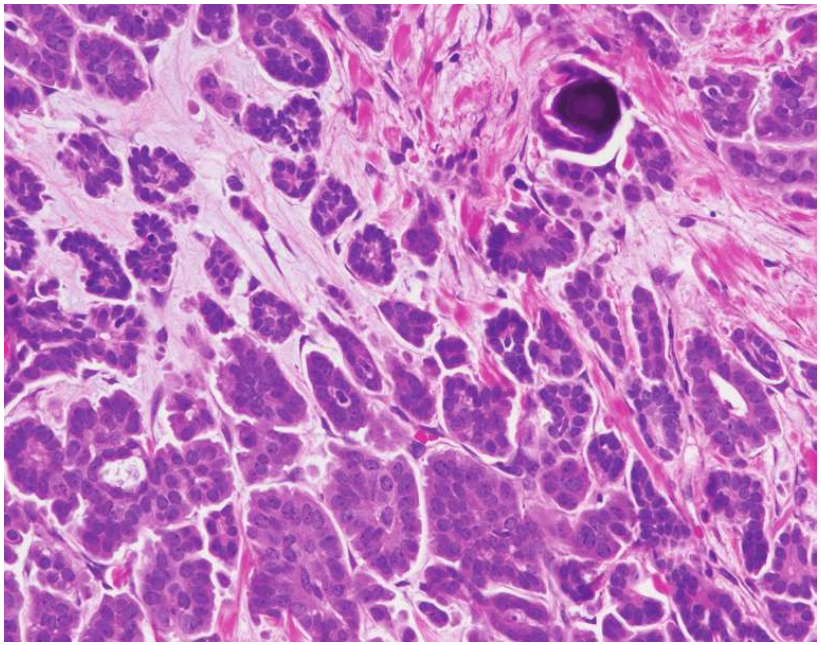
- many arise form fallopian tube via serous tubal intraepithelial carcinoma, rather than ovarian coelomic epithelium.

- mutations in TP53

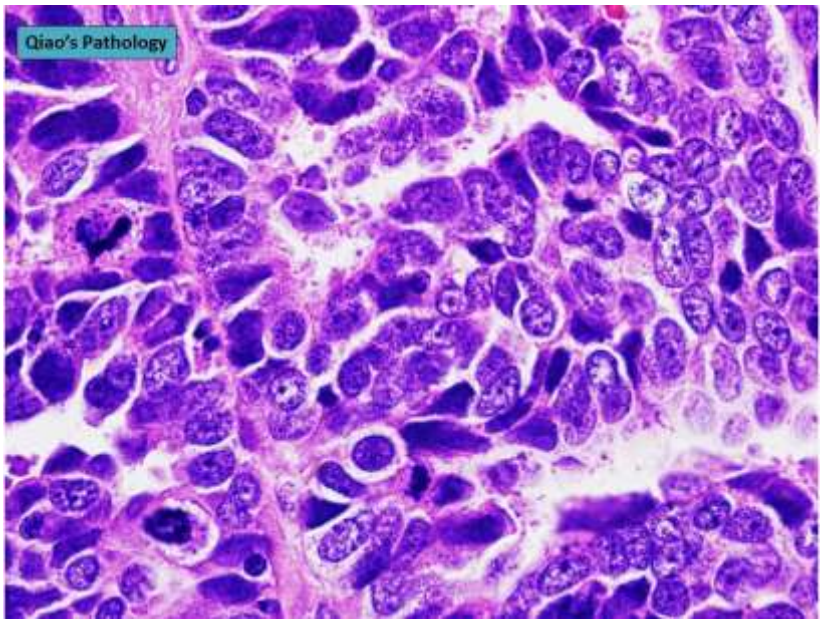
- Anaplasia of cells and invasion of the stroma.

- prognosis poor, depends on stage at the time of diagnosis.

Low grade serous carcinoma



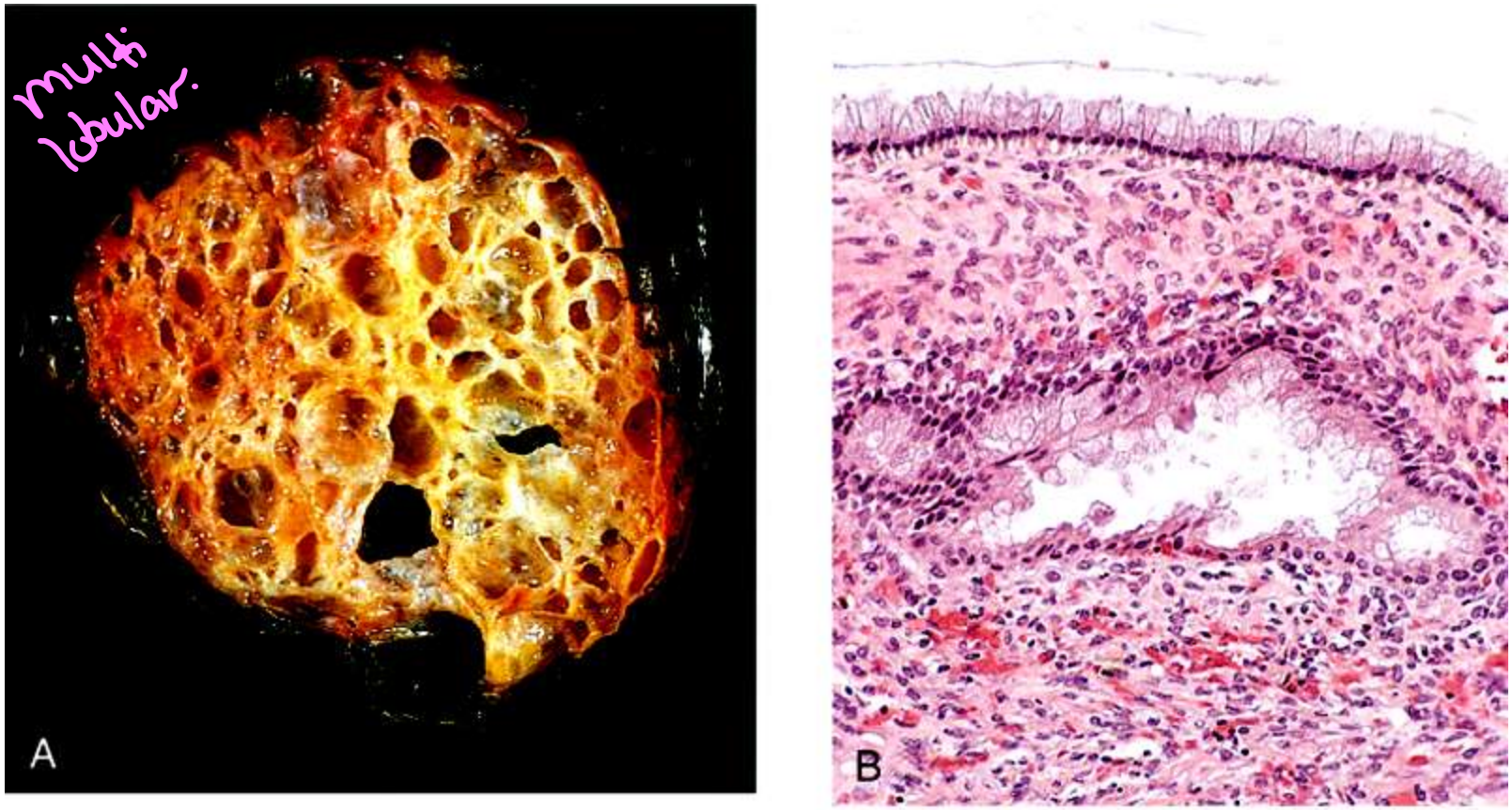
High grade serous carcinoma



2- Mucinous ovarian tumors

- **mucin-secreting** cells.
- 80% benign; 10% borderline; **10% malignant** *(cystadenocarcinoma)*
- **Usually large** and **multilocular**.
- psammoma bodies **not** found
- stage is major determinant of prognosis

Mucinous ovarian tumors



Germ Cell Tumors

Germ cell tumors are rare. Germ cell tumors account for about 2 to 4 percent of all cancers in children and adolescents younger than age 20

- Types according to differentiation:
- dysgerminoma (differentiation to oogonia)
- Embryonal carcinoma (differentiation to primitive embryonal tissue)
- yolk sac tumor(differentiation to endodermal sinus)
- choriocarcinoma (differentiation to placental tissue)
- Teratoma (differentiation to multiple tissue types).

ADDITIONAL INFO :
The most common ovarian germ cell tumor is dysgerminomas

benign cystic teratomas are derived from germ cells.

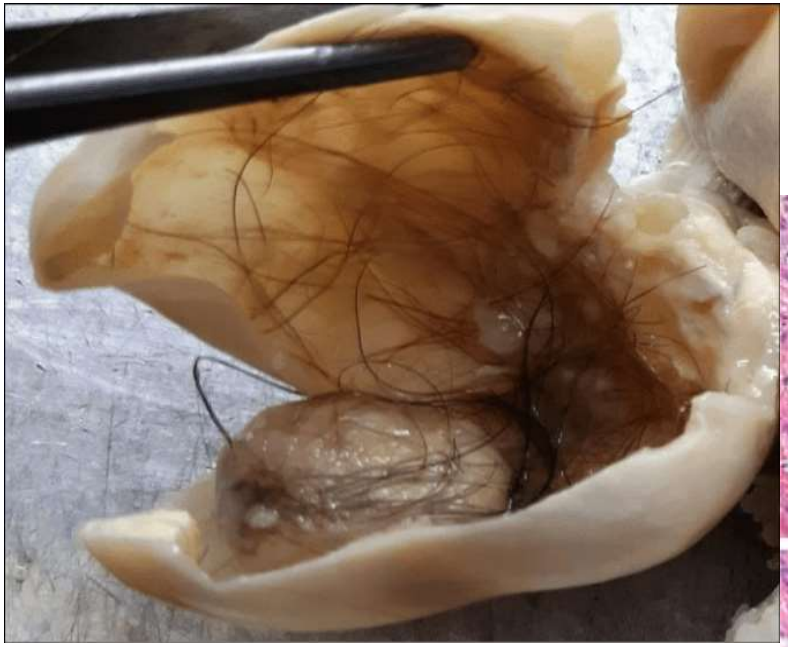
Benign (Mature) Cystic Teratoma

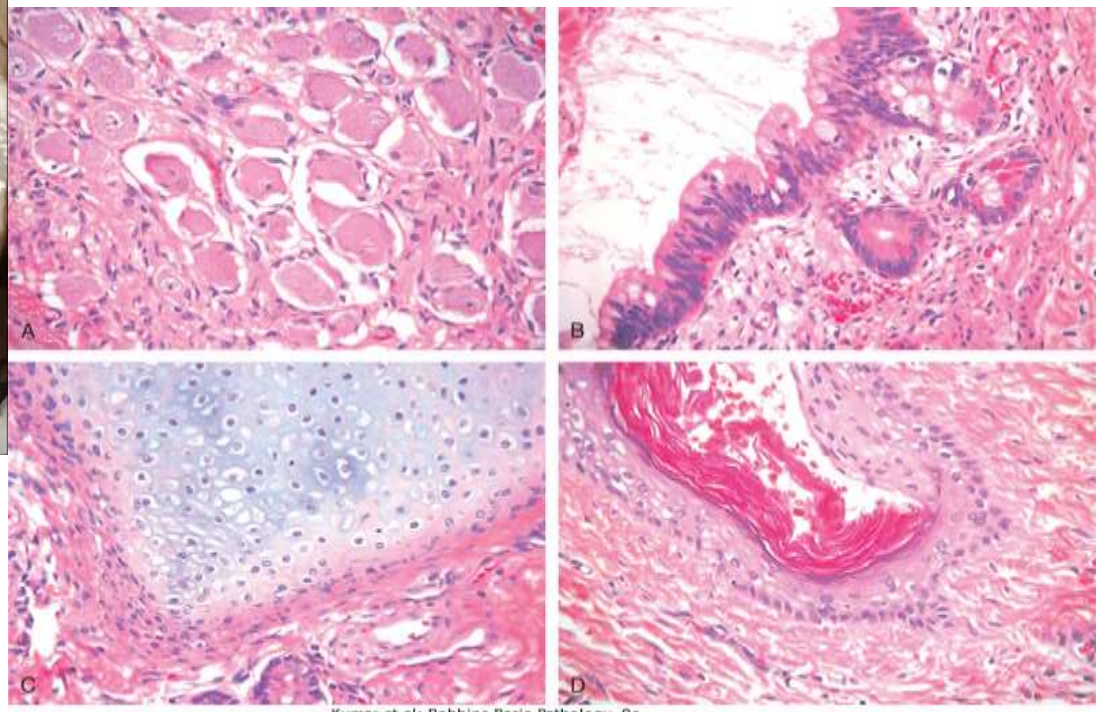
- totipotential germ cells form mature tissues of all three germ cell layers
- 15% -20% of ovarian tumors
- Many discovered incidentally
- 90% unilateral
- cyst filled with sebaceous secretion and hair; bone and cartilage; epithelium, or teeth.
- > 90% are benign mature cystic teratomas
- immature (malignant variant) is rare.
- torsion (10% to 15% of cases)

the immature teratoma is a Benign tumor found in prepubertal adolescents and young woman

ADDITIONAL INFO : In polycystic ovary syndrome, estrogen levels are elevated, increasing the risk of Endometrial cancer

Benign (Mature) Cystic Teratoma





Clinical Correlations for All Ovarian Tumors

- Clinical presentation of all is similar:

- Abd. pain, gastrointestinal complaints, urinary frequency; rarely torsion producing severe abdominal pain mimicking an "acute abdomen."

- Ascites (in Fibromas and malignant serous tumors).

- Functioning ovarian tumors : Estrogens or androgens.

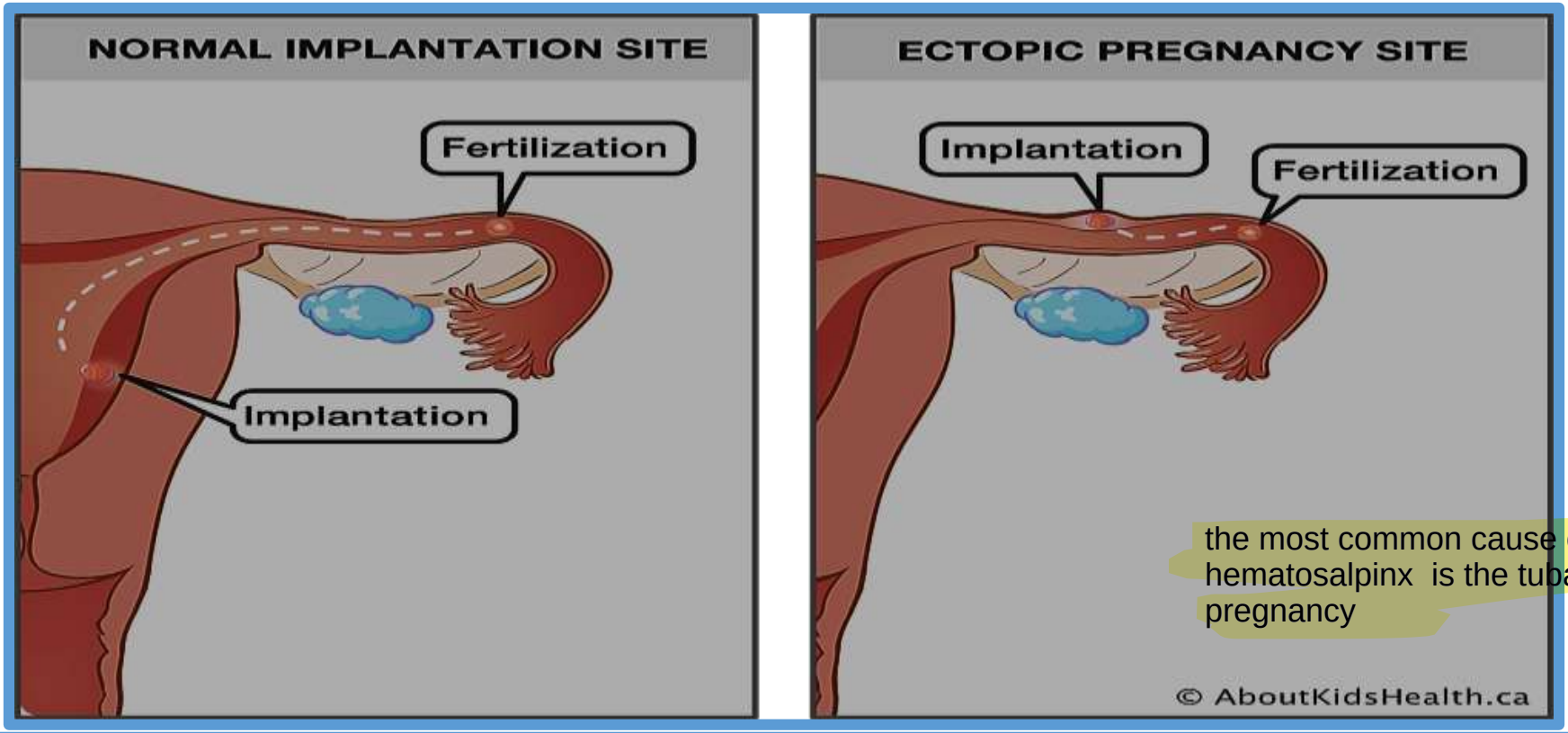
- Treatment: surgery + chemotherapy + radiotherapy
- Outcome of ovarian **cancers** remains unsatisfactory
- **Malignant** tumors are usually discovered in advanced stages
- survival minimally improved since 1970s.
- No early Screening methods are yet available

Pathology of the Fallopian tubes

ECTOPIC PREGNANCY

- implantation of the fertilized ovum outside uterus
- Incidence: 1%
- 90% of cases ocurr in fallopian tubes
- other sites: ovaries, abdominal cavity
- Predisposing factors: tubal obstruction (50%) PID; tumors; endometriosis; **IUCD**..
- In 50% : no anatomic cause can be demonstrated.

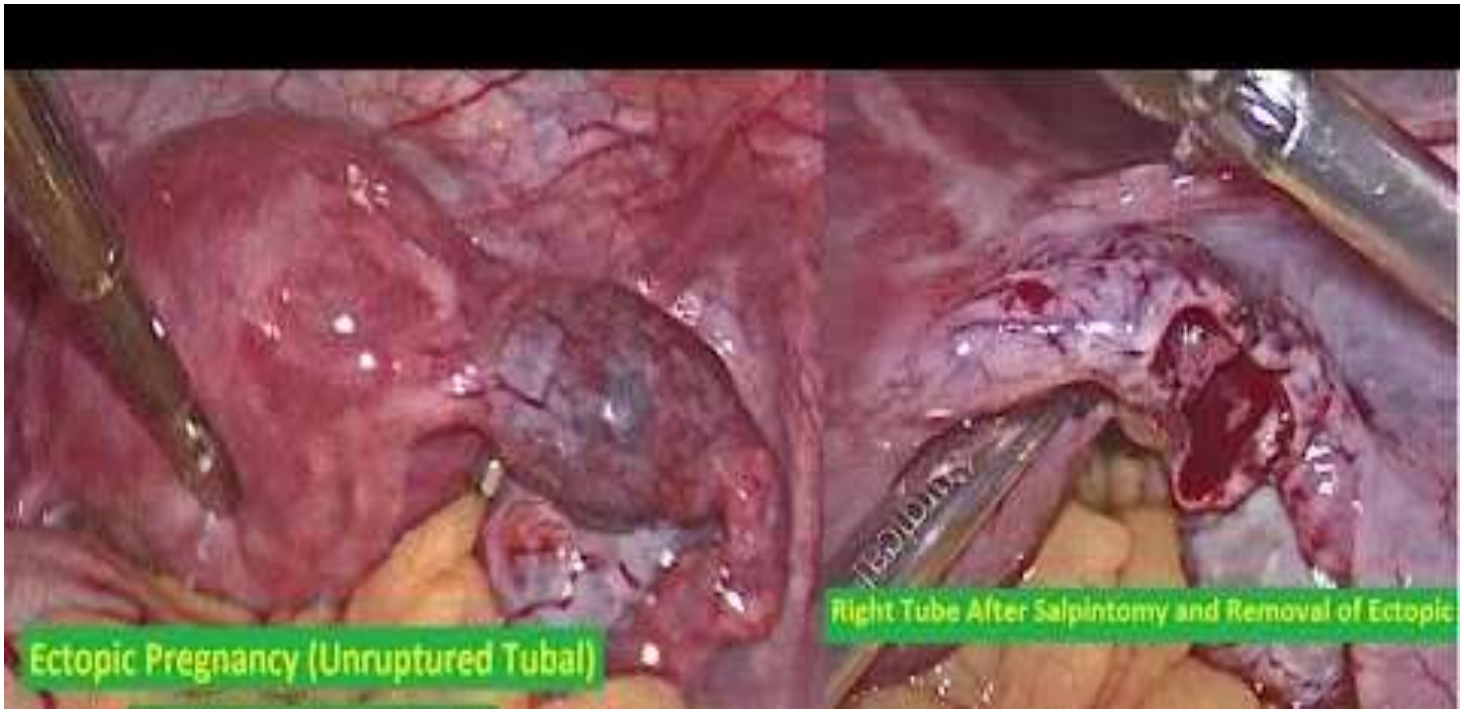
Normal versus ectopic pregnancy



the most common cause of hematosalpinx is the tubal pregnancy

Early: development of embryo and placental tissue
Later: placenta burrows through tubal wall causing intratubal hematoma (hematosalpinx) and intraperitoneal hemorrhage.
Rupture: intense abdominal pain (acute abdomen), often followed by shock.
Prompt surgical intervention is necessary.

Ectopic pregnancy- Management



Tubal malignancies

- **most common histologic type is serous carcinoma.**
- may be the **origin** for many ovarian high-grade serous carcinomas
- **serous tubal intraepithelial carcinoma (STIC**) in fimbriated ends of fallopian tubes.
- STICs have mutations in TP53 in 90% of cases
- increased in women with ***BRCA* mutations**
- Because **of their access to peritoneal cavity**, fallopian tube carcinomas frequently spread to omentum and peritoneal cavity at time of presentation (advanced).

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Trophoblastic diseases

ADD INFO :trophoblast cells;

are cells forming the outer layer of a blastocyst, which provides nutrients to the embryo, and develops into a large part of the placenta

Dr. Nisreen Abu Shahin

Associate professor of Pathology

Faculty of Medicine

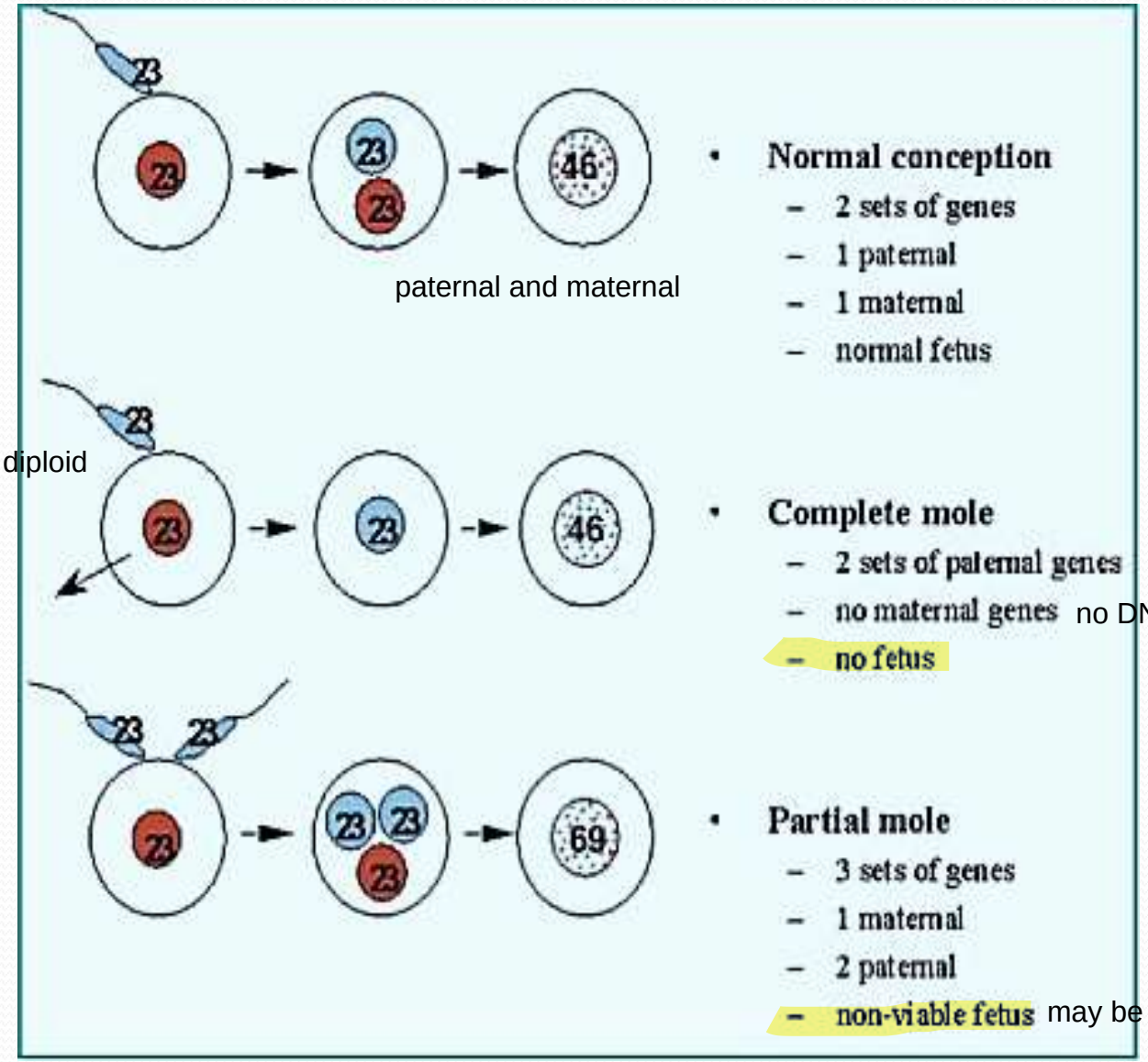
cyst false pregnancy

Hydatidiform Mole

"الحمل العنقودي"

- 2 forms of abnormal gestational processes, result from abnormal fertilization:
- 2 types:
- **complete mole:** an empty egg is fertilized by two spermatozoa (or a diploid sperm), yielding a **diploid** karyotype composed of entirely paternal genes
- **partial mole:** a normal egg is fertilized by two spermatozoa (or a diploid sperm), resulting in a **triploid** karyotype with a predominance of paternal genes

An abnormal gestation containing both maternal and paternal DNA



paternal and maternal

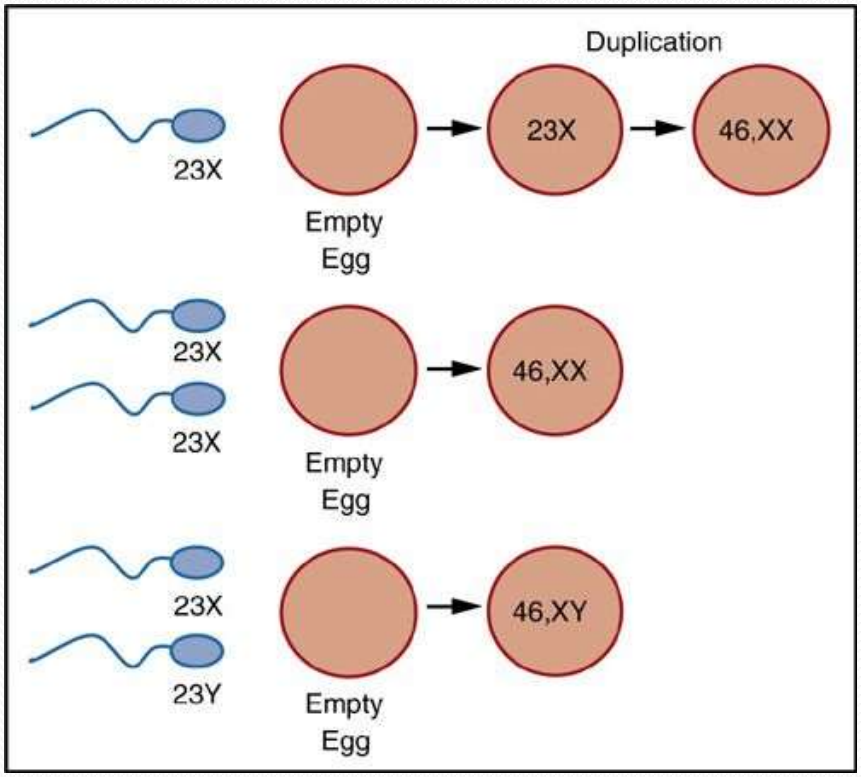
2 sperms or one diploid sperm

NO MATERNAL
NO FETUS

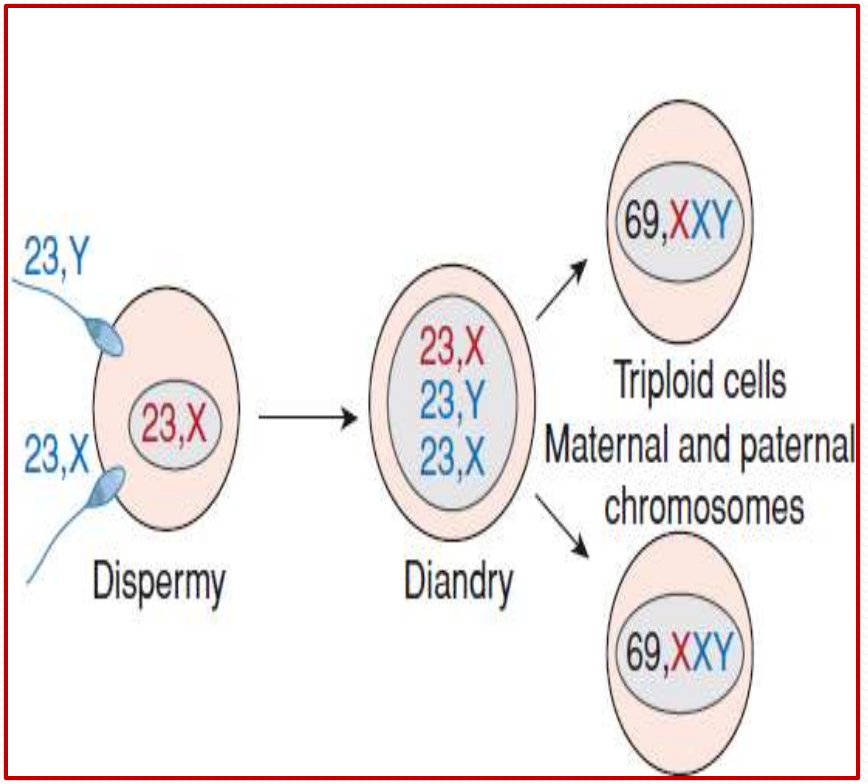
no DNA material

may be early fetal development

Complete mole



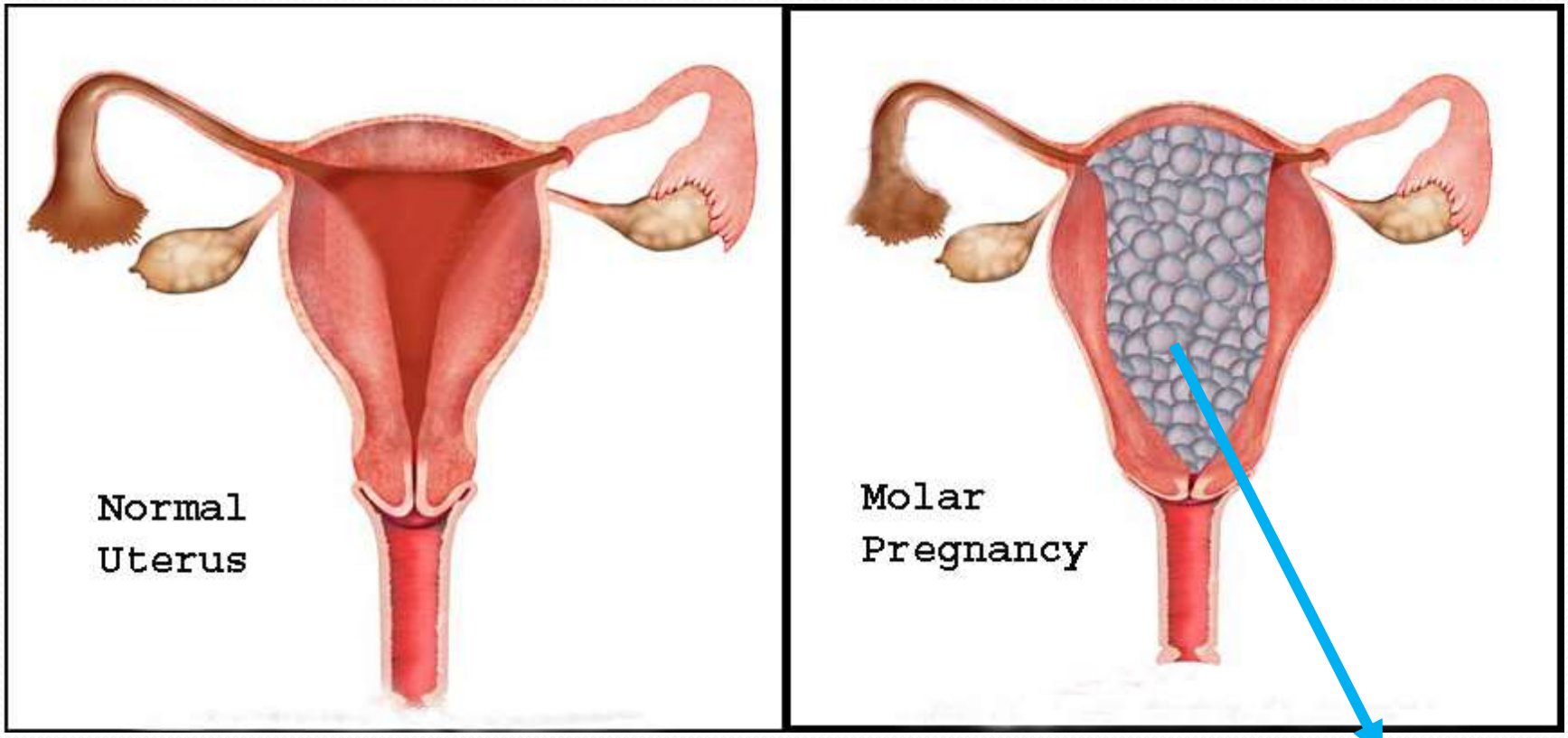
Partial mole



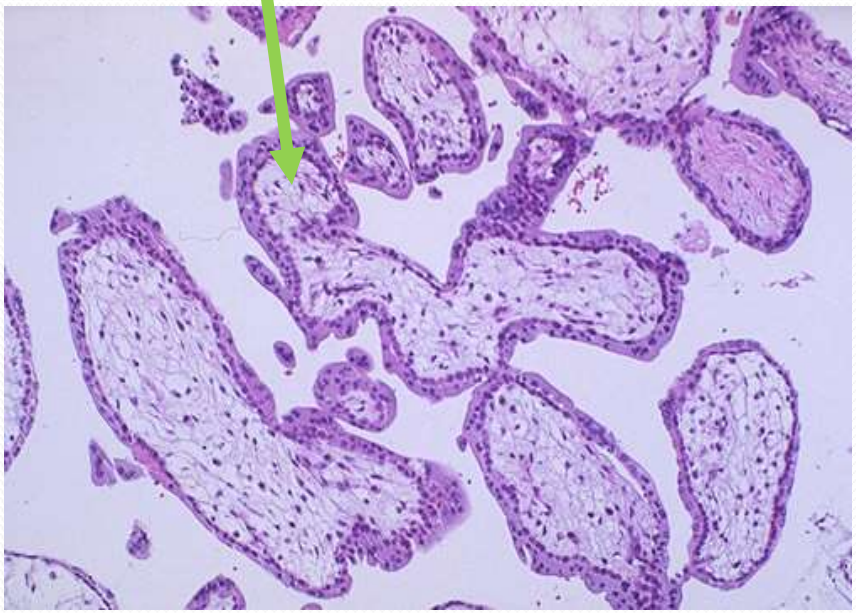
- ***complete*** **hydatidiform mole**→ does not permit embryogenesis = never contains fetal parts, and the chorionic epithelial cells are diploid (46,XX or, uncommonly, 46,XY).

- ***partial*** **hydatidiform mole** → compatible with early embryo formation and may contain fetal parts, has some normal chorionic villi, and is almost always triploid (e.g., 69,XXY).

Normal uterus vs mole pregnancy



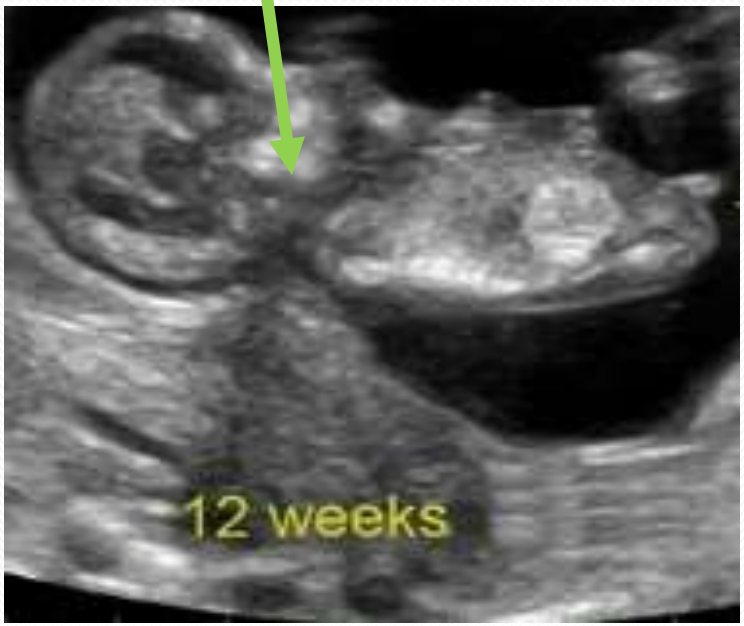
Normal Pregnancy versus Mole – histology

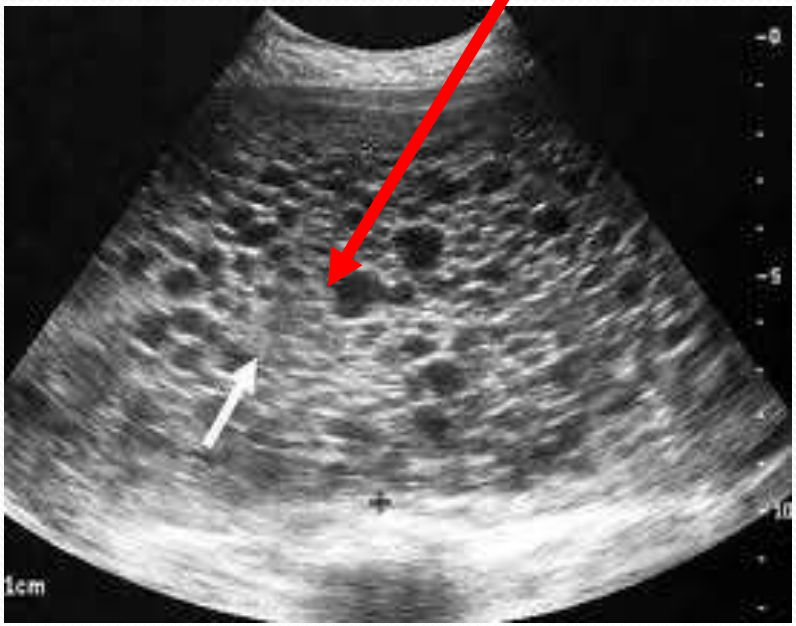


chorionic villi
placental tissues

villi inside then a mesenchyme surrounded by trophoblasts cells

Normal Pregnancy versus Mole – Ultrasound

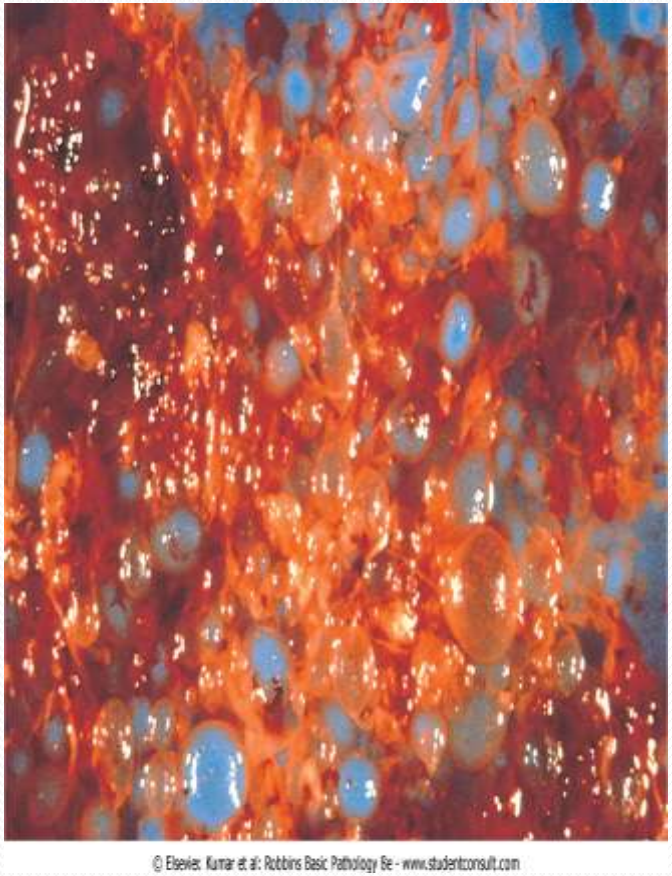


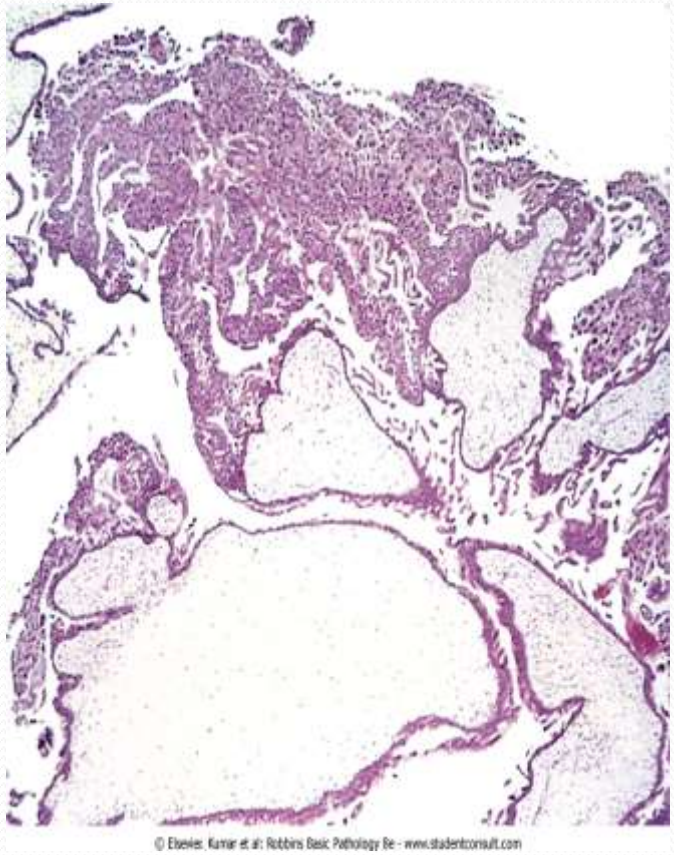


Vesicles

“Snow storm”

Morphology: cystically dilated chorionic villi (grapelike structures); villi are covered by varying amounts of mildly to highly atypical chorionic epithelium





Vesicles

Feature	Complete Mole	Partial Mole
Karyotype	46,XX (46,XY)	Triploid (69,XXY)
Villous edema	All villi	Some villi
Trophoblast proliferation	Diffuse; circumferential	Focal; slight
Atypia	Often present	Absent
Serum hCG	Elevated	Less elevated
hCG in tissue chorionic villi	++++	+
Behavior	2% choriocarcinoma should be terminated	Rare choriocarcinoma

- **incidence** → 1 to 1.5 per 2000 pregnancies; higher incidence in **Asian** countries.
- Moles are most common **before <u>maternal</u>** age 20 years and **after** age 40 years
- Early monitoring of pregnancies by ultrasound → early diagnosis of hydatidiform mole.
- Clinically: Elevations of hCG in the maternal blood and absence of fetal parts by ultrasound

- **Prognosis:**
- **complete moles:**

- 80% to 90% → no recurrence
- 10% → invasive mole (invades myometrium)
- 2% to 3% → choriocarcinoma. have a risk to develop choriocarcinoma

- **Partial moles:**
- better prognosis and rarely give rise to choriocarcinomas.

Choriocarcinoma

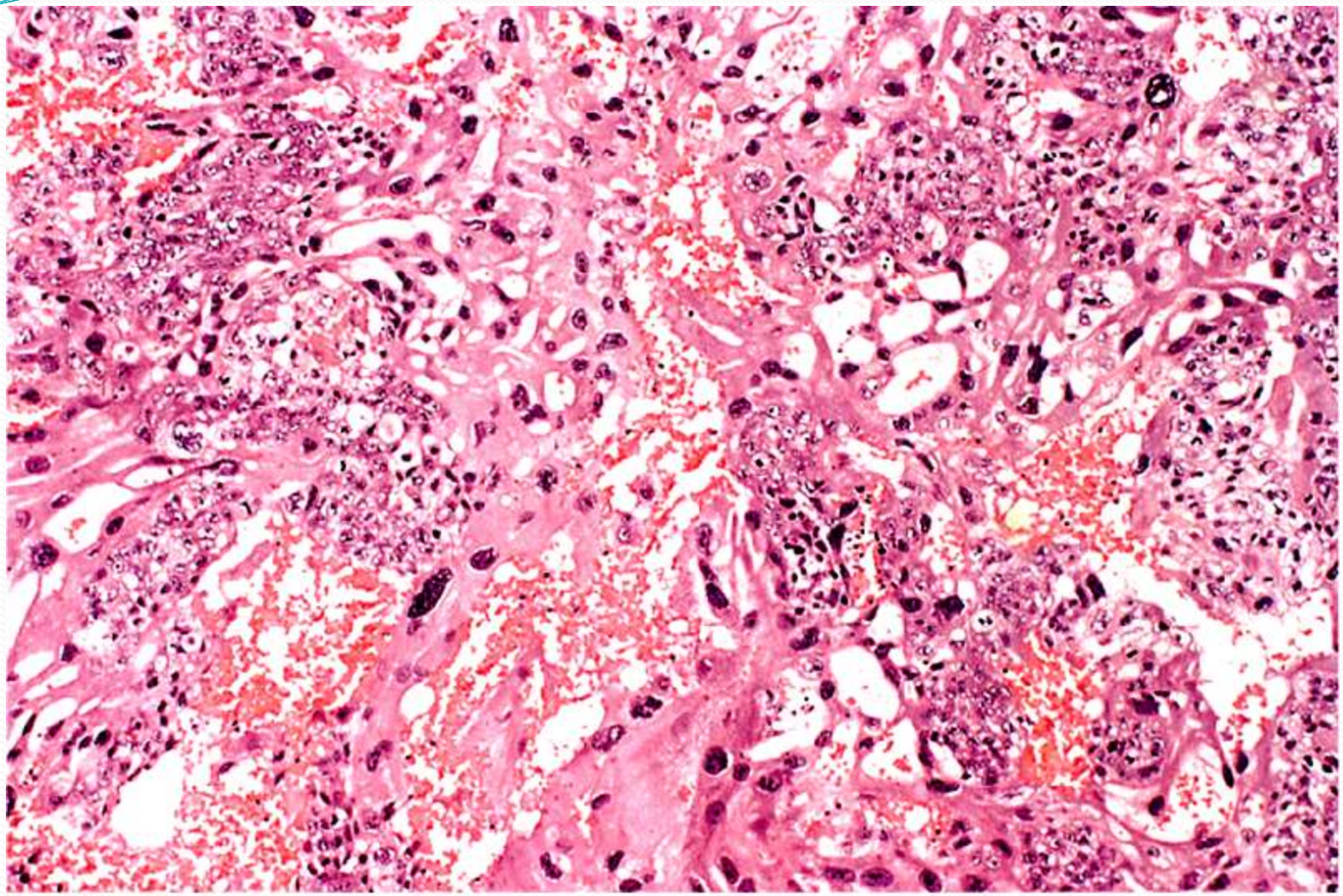
- very aggressive malignant tumor arises from gestational chorionic epithelium or from gonads.
- rare (1 in 30,000 preg); more common in Asian and African countries.
- Risk greater before age 20 and after age 40.

risk factor of molar pregnancy

bimodal age distribution

- 50% arise in complete hyaditidiform moles; 25% arise after an abortion, and most of the rest in normal pregnancy

- Clinically: **bloody, brownish discharge** and **very high titer of hCG** in blood and urine.
- very hemorrhagic, necrotic masses within the myometrium
- chorionic villi are not formed; tumor is composed of anaplastic cytotrophoblast and syncytiotrophoblast.



- **Prognosis**:
- widespread dissemination via **blood** to lungs (50%), vagina, brain, liver, and kidneys.
- Lymphatic invasion is **uncommon**
- Despite extreme aggressiveness, good response to chemotherapy.

Poor response to chemotherapy in choriocarcinomas that arise in the gonads (ovary or testis).

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