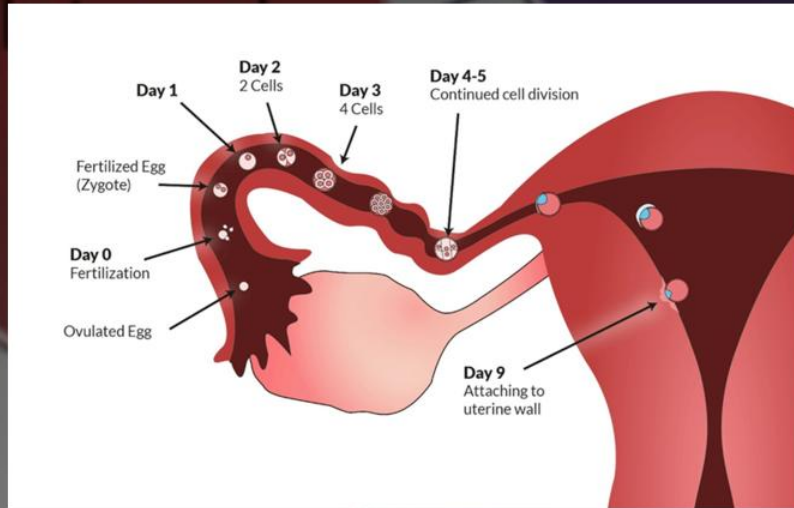


FEMALE GENITAL SYSTEM, LECTURE 4

Fallopian tube and Ovary

وَقَلْبِي وَائْتُّ وَرَهْطَكَ وَصَدْرِي
وَأُطْفَأُ فِي مِلْسَائِي أَرَامٌ ...



Dr. Bushra AlTarawneh, MD

- Anatomical pathologist-Gynecologic and Breast pathologist
- Department of Microbiology & Pathology
- Mutah University School of Medicine
- UGS lectures 2026

FALLOPIAN TUBES - ECTOPIC PREGNANCY

catastrophic
perforial
hemorrhage
إذا حصل rupture
→ could be die

Implantation of a fertilized ovum in any site other than the uterus.

1% of all pregnancy & 90% of cases in fallopian tubes.

Other sites: ovaries, abdominal cavity.

Predisposing factors: tubal obstruction (intraluminal: PID or peritubal: endometriosis or surgery); IUD

tubal pregnancy
next pregnancy
إني بوفندوا
عندهم
contraceptive drug
تكون

50% no anatomic cause can be identified.

FALLOPIAN TUBES - ECTOPIC PREGNANCY



Early: ectopic pregnancies proceeds normally, later the invading placenta eventually burrows through the wall of the fallopian tube, causing **intratubal hematoma (hematosalpinx), intraperitoneal hemorrhage**, or both.



Rupture of an ectopic pregnancy may be catastrophic → sudden onset of intense abdominal pain and signs of an acute abdomen & followed by shock.

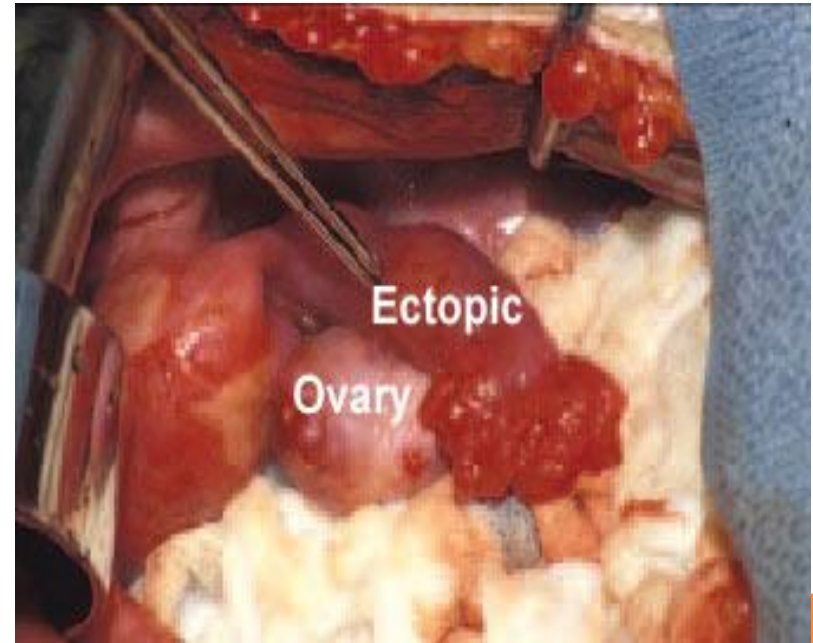
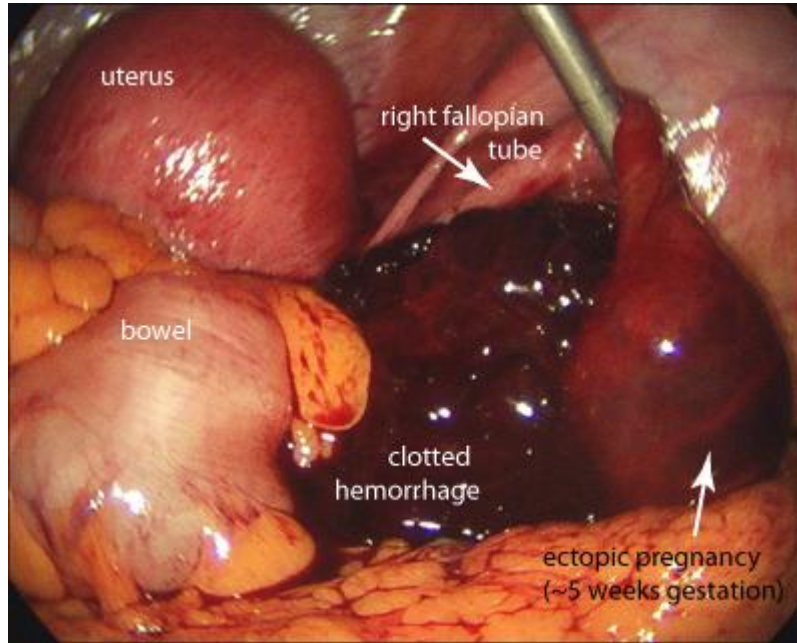
surgery is mandatory



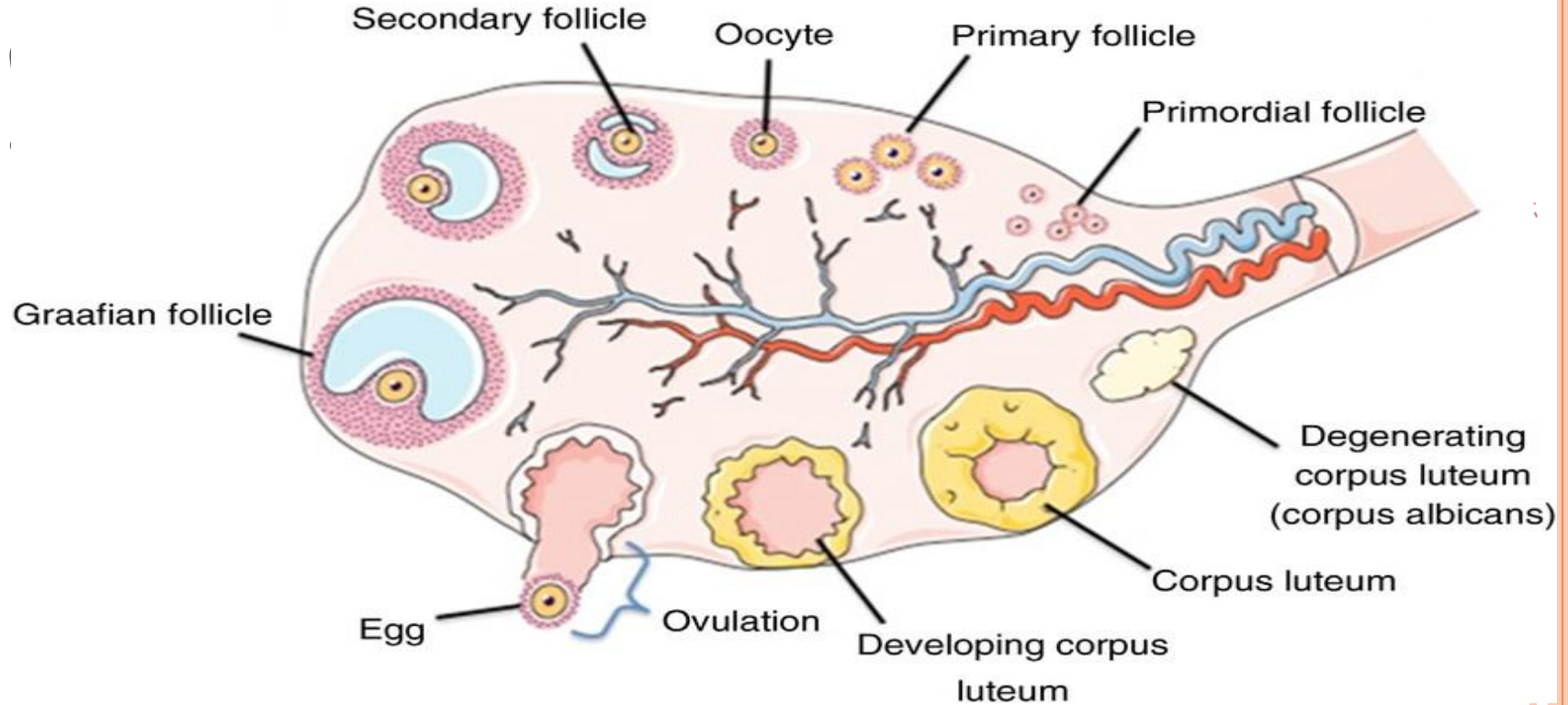
Prompt surgical intervention is necessary.



FALLOPIAN TUBES - ECTOPIC PREGNANCY



OVARIES



OVARIES - POLYCYSTIC OVARIAN SYNDROME

obese + unopposed + high risk of diabetes + infertile

Formerly Stein-Leventhal syndrome.

A complex endocrine disorder; hyperandrogenism, menstrual abnormalities, polycystic ovaries, chronic anovulation, and decreased fertility, 10%

Present after menarche in teenage - young adults

Symptoms: oligomenorrhea, hirsutism, infertility, & sometimes obesity.

OVARIES - POLYCYSTIC OVARIAN SYNDROME

- 🕒 Ovaries twice the normal size, a smooth outer cortex, and studded with subcortical cysts 0.5 to 1.5 cm in diameter.

Benign



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TUMORS OF THE OVARIES

معظم الحالات ← Stage 4



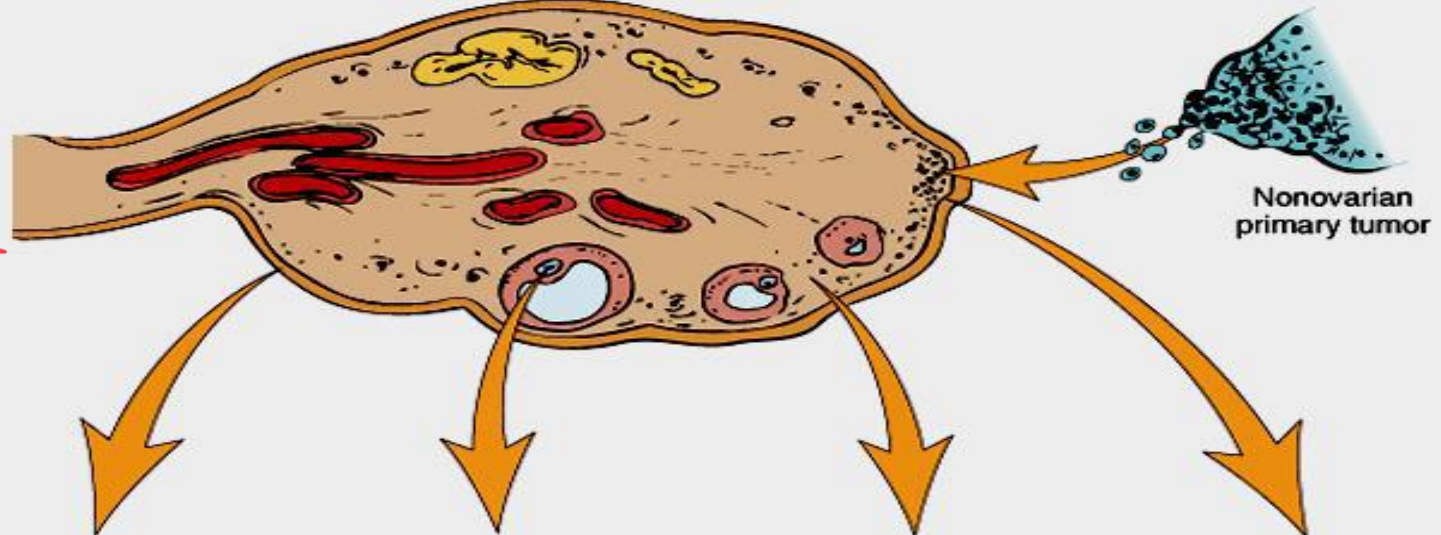
OVARIES - TUMORS OF THE OVARY

- Fifth leading contributor to cancer mortality in women.
- variable → arise from any of the three cell types in the normal ovary:
 1. the multipotent surface (coelomic) epithelium.
 2. the totipotent germ cells.
 3. the sex cord–stromal cells.
- Epithelial neoplasms account for the great majority of ovarian tumors (malignant forms → 90% of ovarian cancers)



نوع سرطان

##



ORIGIN	SURFACE EPITHELIAL CELLS (Surface epithelial-stromal cell tumors)	GERM CELL <i>From ova/sperm</i>	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	<ul style="list-style-type: none"> • Serous tumor • Mucinous tumor • Endometrioid tumor • Clear cell tumor • Brenner tumor • Cystadenofibroma 	<ul style="list-style-type: none"> • Teratoma • Dysgerminoma • Endodermal sinus tumor • Choriocarcinoma <p><i>تساويها male seminoma</i></p> <p><i>نفس الازيميني male</i></p>	<ul style="list-style-type: none"> • Fibroma • Granulosa-theca cell tumor • Sertoli-Leydig cell tumor 	

OVARIES - SURFACE EPITHELIAL TUMORS

- Five major types: Serous, Mucinous, Endometrioid, Clear cell, or Brenner.
- Each type has benign, borderline and malignant tumors.
بتر و 2 ع البيت *chemotherapy* *حسب عمرها ووظائفها وحين تطهرها* *لازم علاج كامل*
- Major determinant of outcome is stage rather than histologic type.
- Important risk factors:
 1. nulliparity.
 2. family history
 3. Germline mutations in certain tumor suppressor genes;
main causative



OVARIES - BRCA1 OR BRCA2

- 5-10% of ovarian cancers are familial.
- most of them ass with mutations in the *BRCA1* or *BRCA2* tumor suppressor genes.
- Genes also ass with hereditary breast cancer.
- Present only in only 8-10% of sporadic cases.
- .. So sporadic tumor arise through alternative molecular mechanisms.

anabher
mubali on
نسبة

negative
BRCA1,2

حتى لو



OVARIES - SEROUS TUMORS

- The most common of the ovarian tumors overall.
- The most common malignant ovarian tumors 60%.
- Two genetic pathways:
 1. K-RAS mutations → borderline & low grade cancers.
 2. p53 and BRCA1 mutations → High-grade serous carcinomas.



SEROUS TUMORS - BENIGN

SEROUS TUMORS

*single, smooth, outer surface
of smooth*

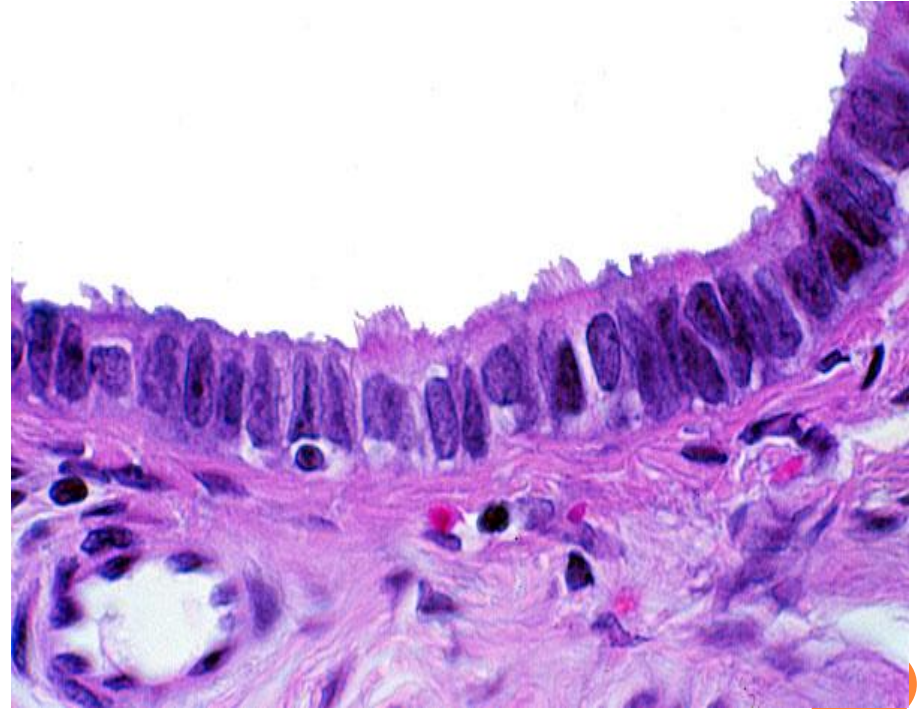
- Gross: Large & cystic (up to 30 cm), filled with a clear serous fluid
- May be bilateral.
- Called serous cystadenoma



SEROUS TUMORS - BENIGN

SEROUS TUMORS

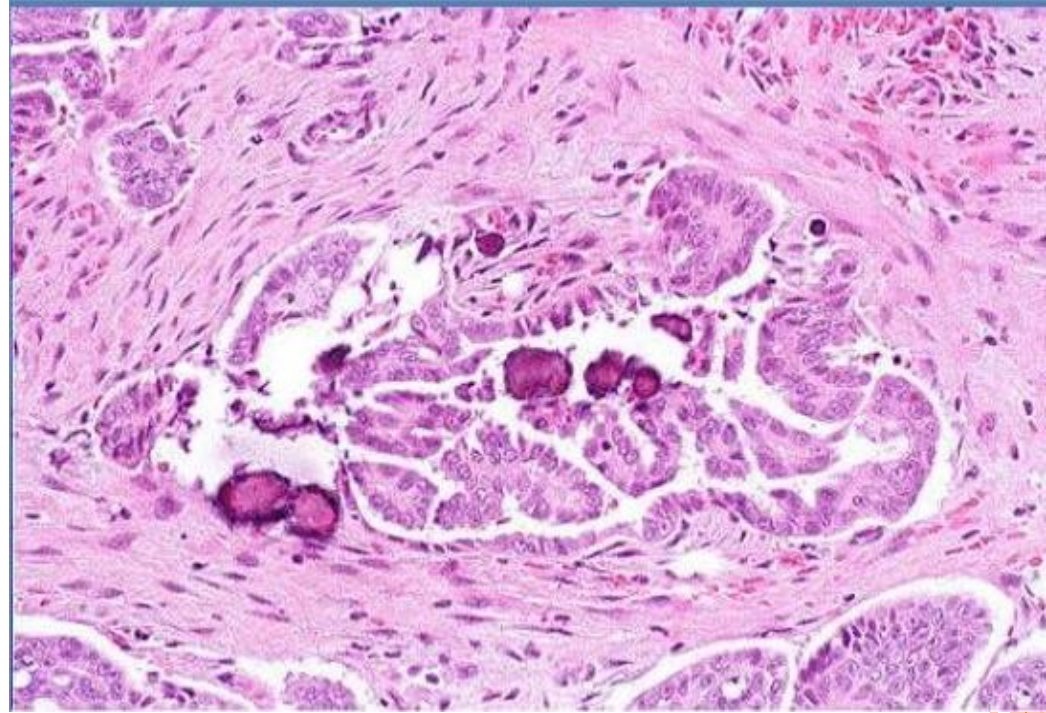
Microscopy: Single layer of columnar epithelium. Some cells are ciliated.



SEROUS TUMORS - SEROUS TUMORS

(darkly purple)

Psammoma bodies (laminated calcified concretions) are common in tips of papillae of **all serous tumors**



SEROUS TUMORS - BORDERLINE

SEROUS TUMORS

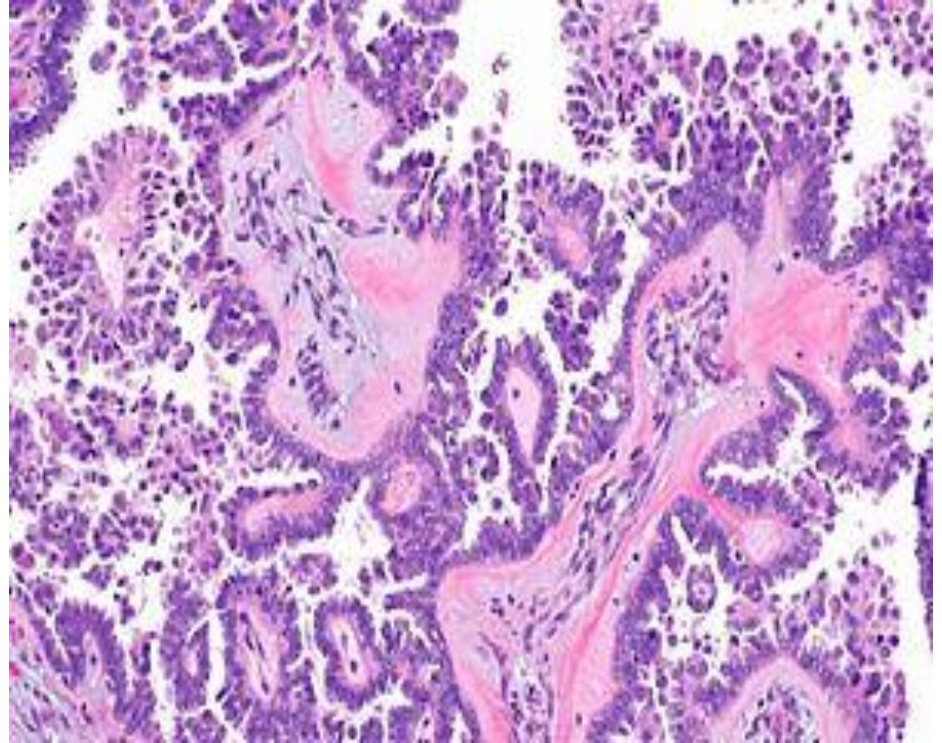
- complex architecture.
(Protruding papillary projections)
- might be associated with peritoneal implants.



SEROUS TUMORS - BORDERLINE

SEROUS TUMORS

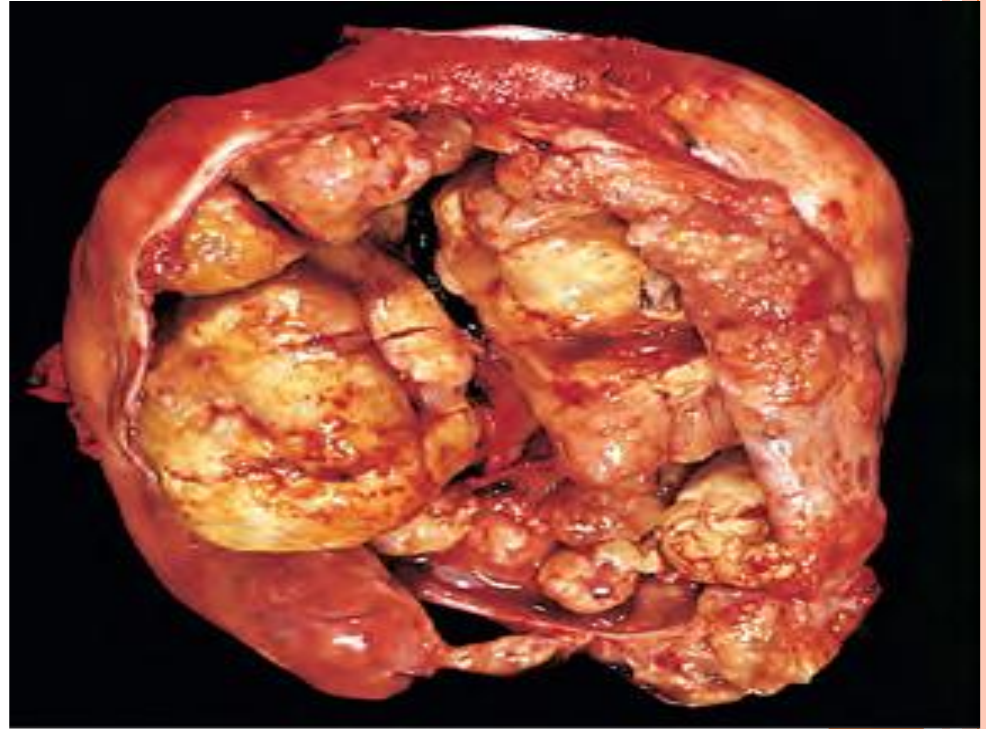
- complex architecture.
- mild cytologic atypia, but no stromal invasion.
- Prognosis intermediate between benign & malignant.



SEROUS TUMORS - SEROUS

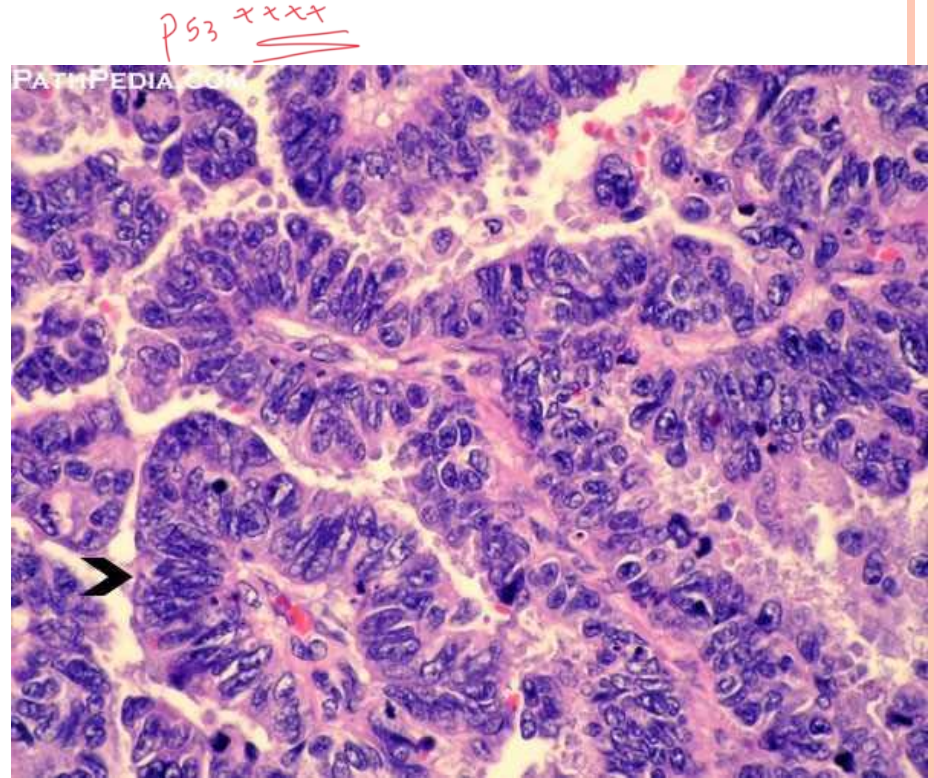
CARCINOMA *Large, hemorrhage*

- papillary formations are usually more complex
- tumor has **invaded the serosal surface**.
- prognosis **poor**, depends on stage at the time of diagnosis.



SEROUS TUMORS - SEROUS CARCINOMA

- *highly* complex papillary formations (multilayered)
- markedly cytological atypia
- By definition nests of malignant cells invade the stroma.



OVARIES - MUCINOUS TUMORS

Neoplastic epithelium consists of mucin-secreting cells.

Mucinous tumors are less likely to be malignant; 80% benign; 10% borderline; 10% malignant.

Compared to serous tumors → larger & multicystic grossly, filled with mucinous fluid, & less likely to be bilateral.

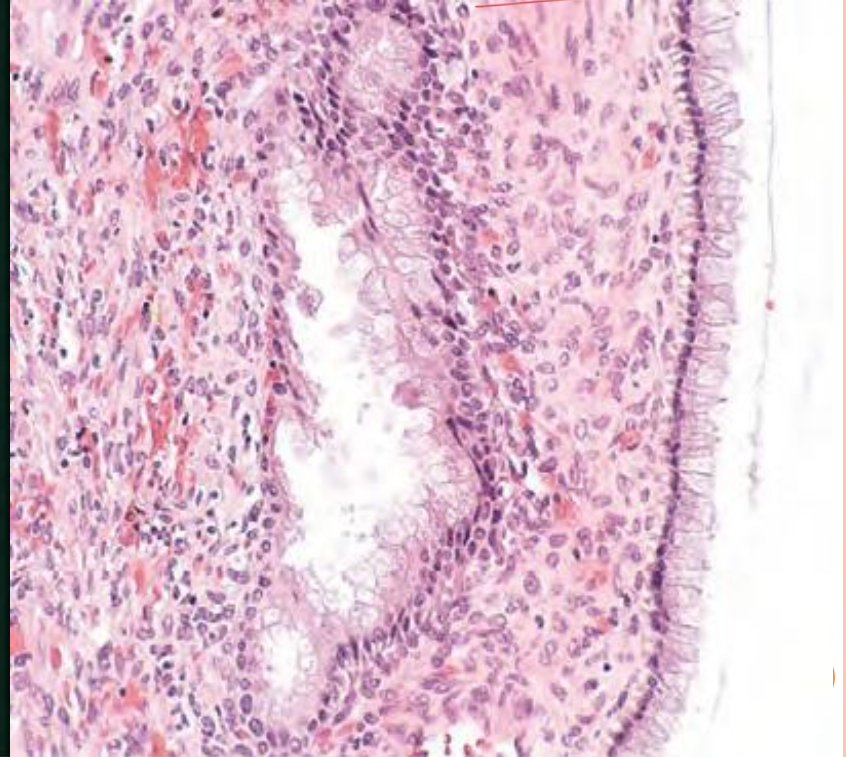
Genetics: Mutations in KRAS proto-oncogene (carcinomas)

Malignant features: solid areas of growth, stratification of lining cells, cytologic atypia, and stromal invasion.

OVARIES- MUCINOUS CYSTADENOMA

atypia x
morphism x

mucine secreting epithelial lining, multicystic



OVARIES - SURFACE EPITHELIAL TUMORS

- **Endometrioid**: develop in ass with endometriosis, similar to uterine counterpart, tumors usually are malignant.
- 15-30% of ovarian tumors have a concomitant endometrial carcinoma.
- **Brenner** nests of transitional-type epithelium resembling that of the urinary tract, most are benign.

urthral lining epithelial



OVARIES - GERM CELL TUMORS

Germ cell tumors may differentiate toward :

- Oogonia (dysgerminoma) seminoma
- Primitive embryonal tissue (embryonal)
- Yolk sac (endodermal sinus tumor)
- Placental tissue (choriocarcinoma)
- Multiple fetal tissues (teratoma).



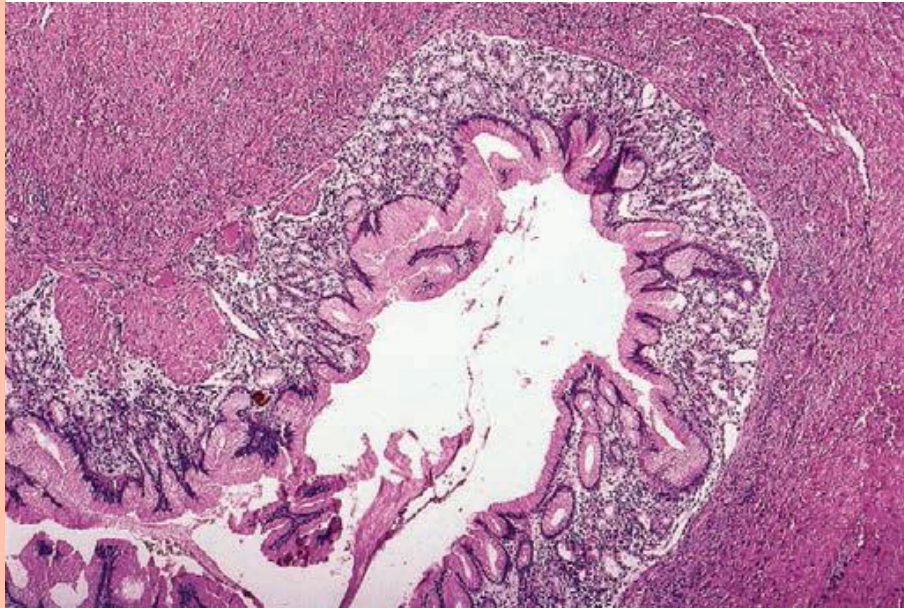
OVARIES - GERM CELL TUMORS

- The most common → **teratoma** (90% unilateral). *and Benign*
- *Fetal* Either: (1) benign mature cystic teratomas or (2) the immature malignant teratomas (rare)
- Mature tissues derived from all three germ cell layers: ectoderm, endoderm, and mesoderm.
- Immature: minimally differentiated **nerve** cartilage, bone, or muscle tissue.
- **Gross**: cyst filled with sebaceous secretion and hair; bone and cartilage; epithelium, or teeth.

BENIGN MATURE CYSTIC TERATOMAS

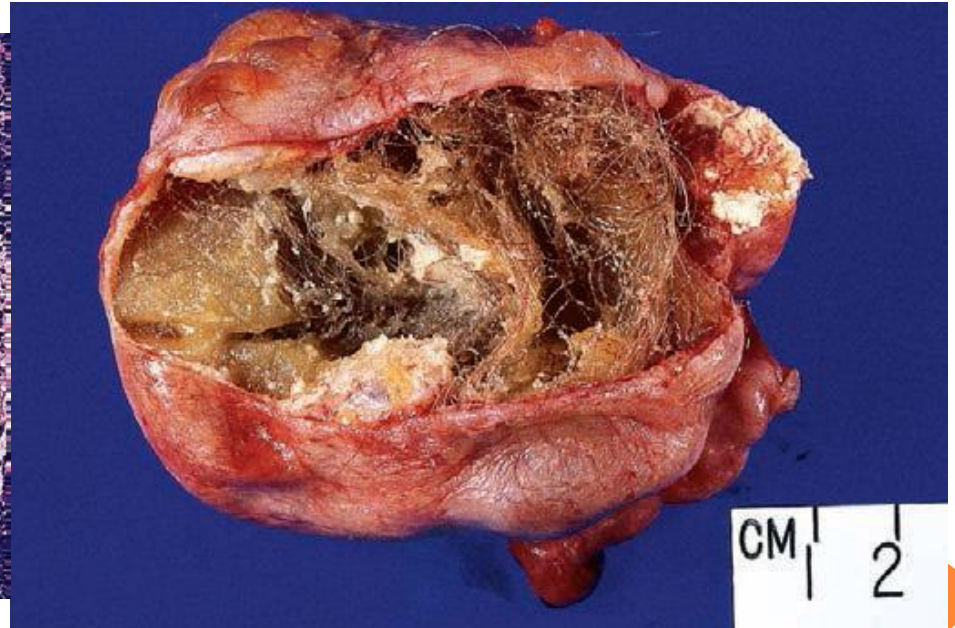
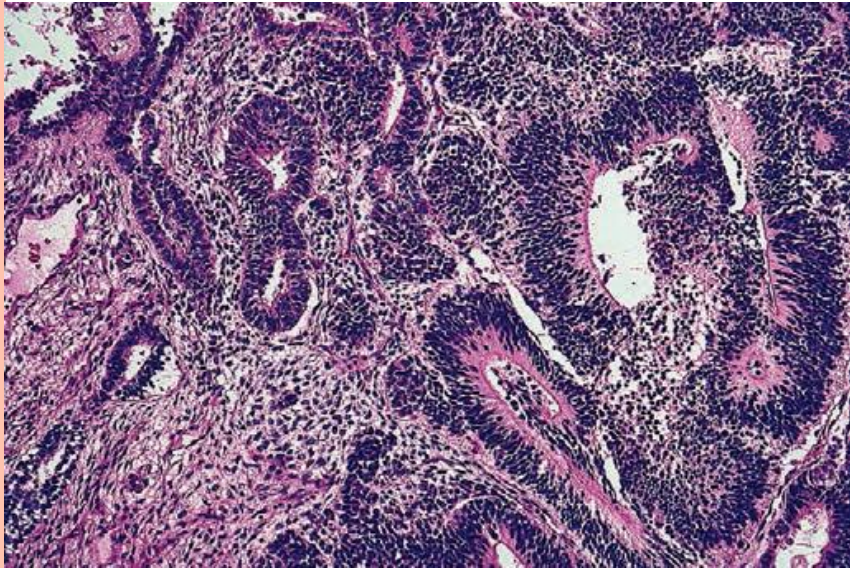
Benign tissue

صحن استوف بينا ابي امسي



Embryonal tissue

IMMATURE MALIGNANT TERATOMA



- Tumors contain cysts lined by epidermis replete with adnexal appendages—hence the common designation *dermoid cysts*
- A rare subtype of teratoma is composed entirely of specialized tissue.
- The most common example is *struma ovarii*, which is composed entirely of mature thyroid tissue that may actually produce hyperthyroidism.
- Other specialized teratomas may take the form of *ovarian carcinoid*, which in rare instances produces carcinoid syndrome.



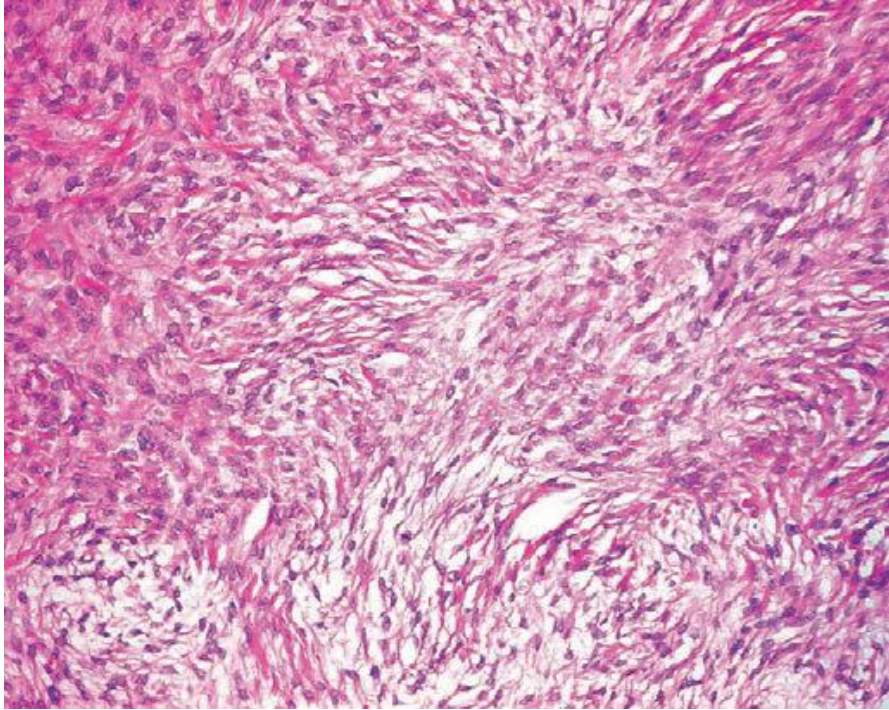
OVARIES – SEX CORD TUMORS

Neoplasm	Peak Incidence	Usual Location	Morphologic Features	Behavior
Sex Cord Tumors				
Granulosa-theca cell	Most postmenopausal, but may occur at any age	Unilateral	May be tiny or large, gray to yellow (with cystic spaces) Composed of mixture of cuboidal <u>granulosa cells</u> in cords, sheets, or strands and spindled or plump lipid-laden theca cells Granulosa elements may recapitulate ovarian follicle as <u>Call-Exner bodies</u>	May elaborate large amounts of <u>estrogen</u> (from thecal elements) and so may promote endometrial or breast carcinoma Granulosa element may be malignant (5% to 25%)
Thecoma-fibroma	Any age	Unilateral	Solid gray fibrous cells to yellow (lipid-laden) plump thecal cells	Most hormonally <u>inactive</u> A few elaborate estrogens About 40%, for obscure reasons, produce ascites and hydrothorax ★(Meigs syndrome) <u>Fibroma</u> Rarely malignant
Sertoli-Leydig cell	All ages	Unilateral	Usually small, gray to yellow-brown, and solid Recapitulates development of testis with tubules or cords and plump pink Sertoli cells	Many masculinizing or defeminizing Rarely malignant

يعني ما نشعر أي شيء

OVARIAN FIBROMA

- Well circumscribed
- unencapsulated
- plump cells
- embedded with collagenous stroma

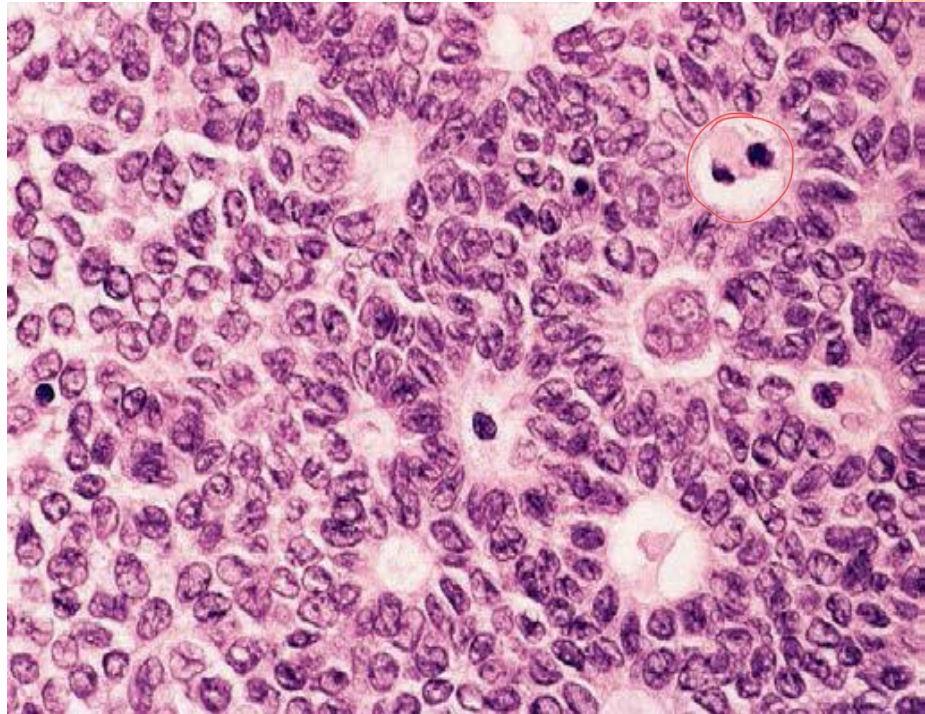
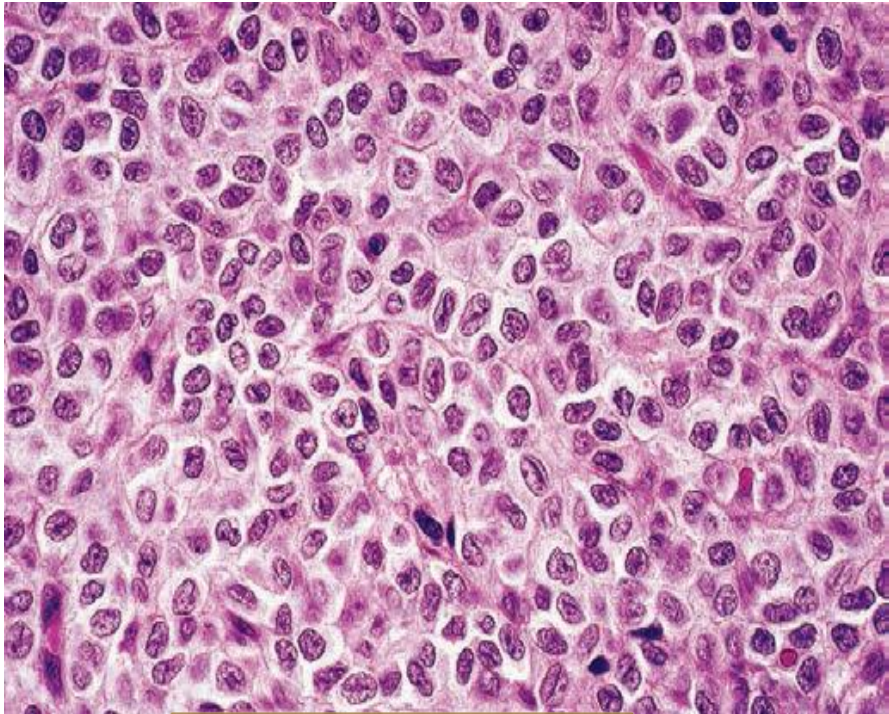


الحبيبات

like coffee bean

inclusion

OVARIES-GRANULOSA CELL TUMOR.



Granulosa cell tumor

الحبيبات



There is a history of breast-cancer

← تاريخ سابق ←

↳ correlation
estrogen ↑ ↑

OVARIES - TUMORS OF THE OVARY

- CLINICAL

- Symptoms & signs appear only when tumors are well advanced.
- Sx: pain, gastrointestinal complaints, urinary frequency.
- Smaller masses, sometimes twist on their pedicles (torsion) producing severe abdominal pain that mimics an acute abdomen.
- Sex cord–stromal tumors may display differentiation toward granulosa, Sertoli, Leydig, or ovarian stromal cell type. Depending on differentiation, they may produce estrogens or androgens.
- ➔ Functioning ovarian tumors (sex –cord stromal) come to attention because of the endocrinopathies they produce.
- One such marker, the protein CA-125, is elevated in the sera of 75% to 90% of women with epithelial ovarian cancer.

→ Follow up
and check up
for family history
السريرية العائلية

Handwritten notes in red ink:
Top row: 2 # #
Bottom row: 14. 16. * * *

METASTASES TO OVARY

- Older ages.
- Laterality: mostly bilateral
- Size: mostly < 10cm
- Surface involvement: mostly multiple small nodules on surface
- Extensive intraabdominal spread: mostly true for metastatic mucinous tumor
- Hilar involvement common in hematogenous spread
- Microscopically: Similar to primary tumor
- Primaries are gastrointestinal tract (Krukenberg tumors), breast, and lung.

Handwritten note in red ink: # gi tumor

Handwritten note in red ink: #

