PATHOLOGY

○ Sheet ✓ Slide ○ Handout

Number

7

Subject

Ovarian Pathology

Doctor

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Date: **00/00/2016**

Price:

Ovarian Pathology

- **Polycystic Ovaries (*Stein-Leventhal syndrome).***
  - oligomenorrhea, hirsutism, infertility, and obesity
  - girls after menarche
  - Many cystic follicles in ovaries (but **no** ovulation)
  - Pathogenesis: excessive production of androgens; high concentrations of LH, and low concentrations of FSH.
  - **Bilateral enlarged ovaries, fibrotic outer surface, subcortical cysts <1 cm.**
  - **Cysts= unruptured follicles lined by granulosa cells with a hypertrophic luteinized theca interna, with absence of corpora lutea**

Ovarian Neoplastic Diseases

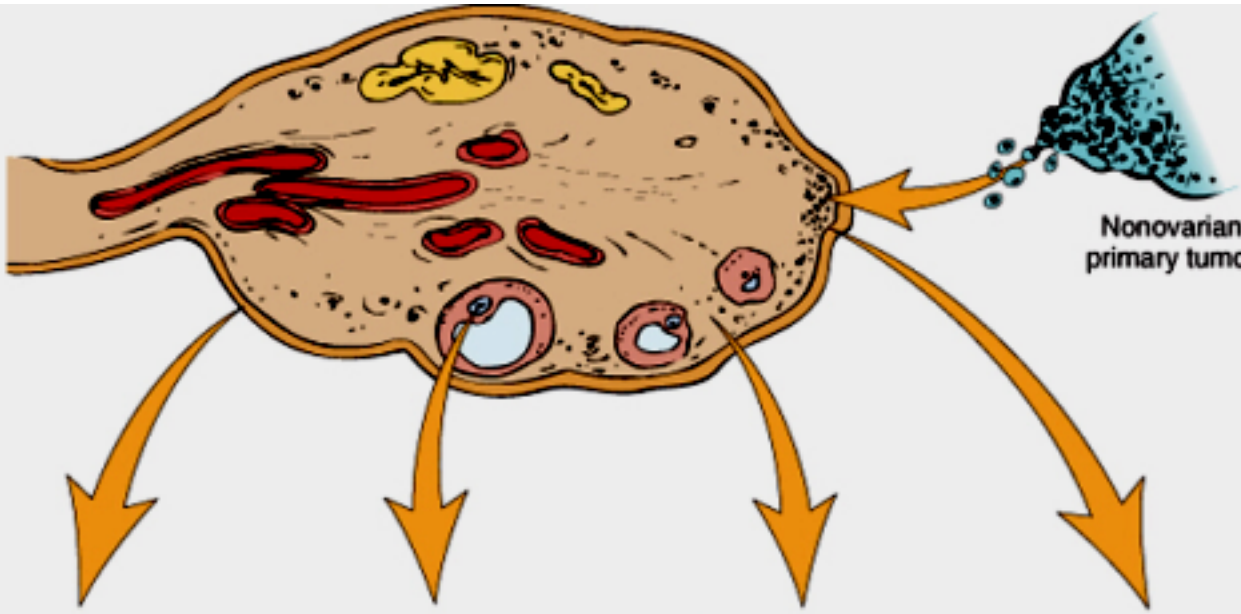
- 5th most common cancer in women.
- 5th leading cause of cancer death in women.
- Origin of ovarian tumors:

  1-The surface (coelomic) covering epithelium

  2- The germ cells

  3- The sex cord/stromal cells.
- Each of these cell types gives rise to a variety of tumors

Ovarian Neoplasms



ORIGIN	SURFACE EPITHELIAL CELLS (Surface epithelial–stromal cell tumors)	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	

Pathogenesis-familial cases

- Risk factors: **nulliparity** and **family history**.
- use of OCPs may **reduce** risk.
- Only 5%-10% are familial
- molecular pathogenesis: (***BRCA* 1** and *2)* **genes**

Pathogenesis- sporadic cases

- *BRCA* genes Mutations in only 10% of sporadic
- other molecular pathways:
- ***p53*** (50%)
- **HER2/NEU** over-expression (35%) (poor prognosis).
- **K-RAS** protein over-expression (30%) (mucinous)

SURFACE EPITHELIAL TUMORS- types:

- Serous
- Mucinous
- Endometrioid
- Clear cell
- Brenner

- All types include benign, borderline, and malignant tumors

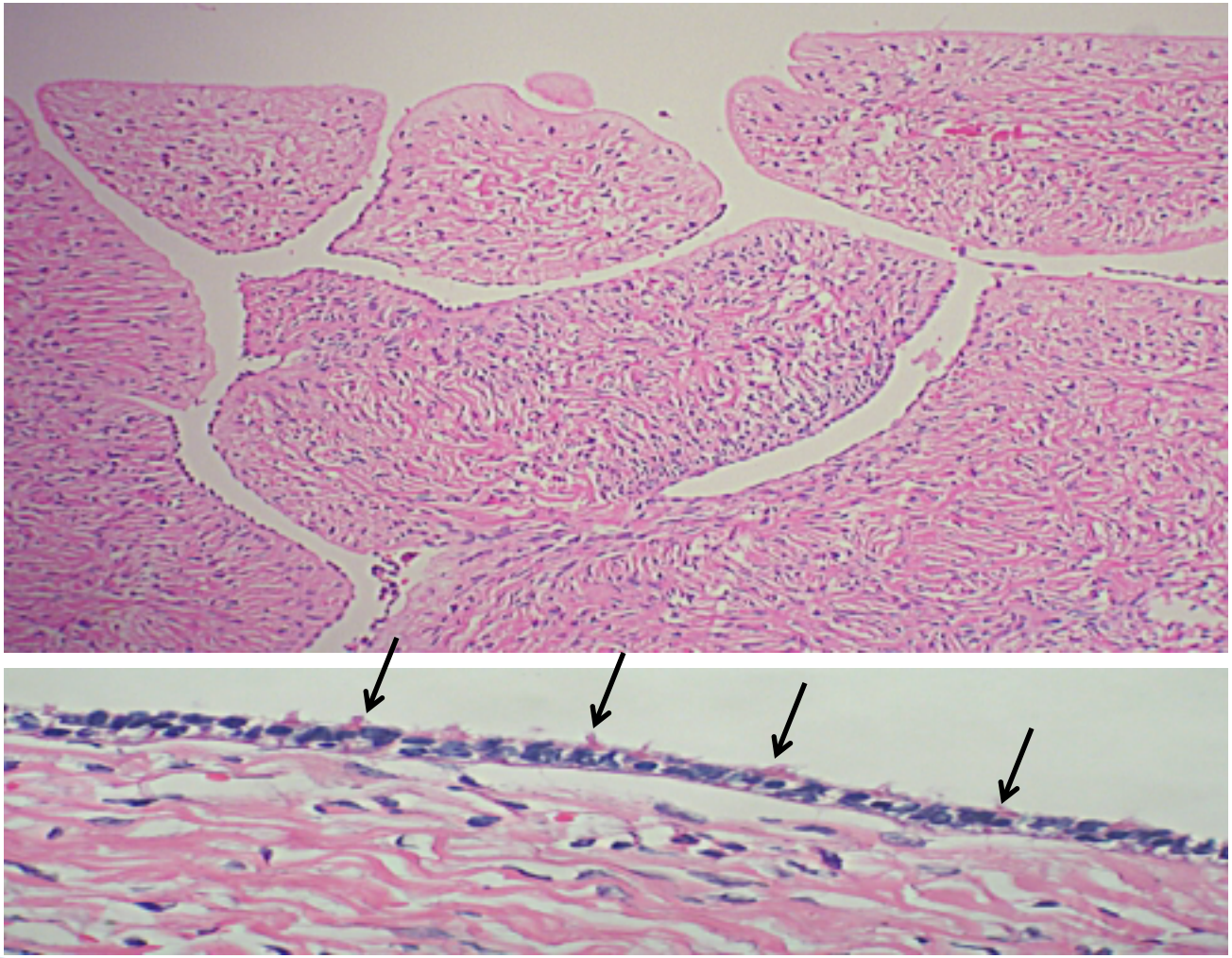
1- Serous Tumors

- **<u>the most frequent ovarian tumors.</u>**
- **60% benign, 15% borderline, and 25% malignant.**
- Benign →30 - 40 years
- malignant →45 - 65 years.
- **the most common malignant ovarian tumors (60%)**
- Mutations in ***BRAF*** and ***K-RAS*** are common in borderline tumors and low grade cancers.
- High-grade serous carcinomas→ mutations in ***p53*** and ***BRCA1.***
- **Psammoma bodies** (laminated calcified concretions) are common in tips of papillae of **<u>all</u>** serous tumors

Morphology

- **Benign serous tumors**:
- large cystic, (30 cm).
- May be bilateral.
- filled with a clear serous fluid
- **single layer** of columnar epithelium. Some cells are ciliated.

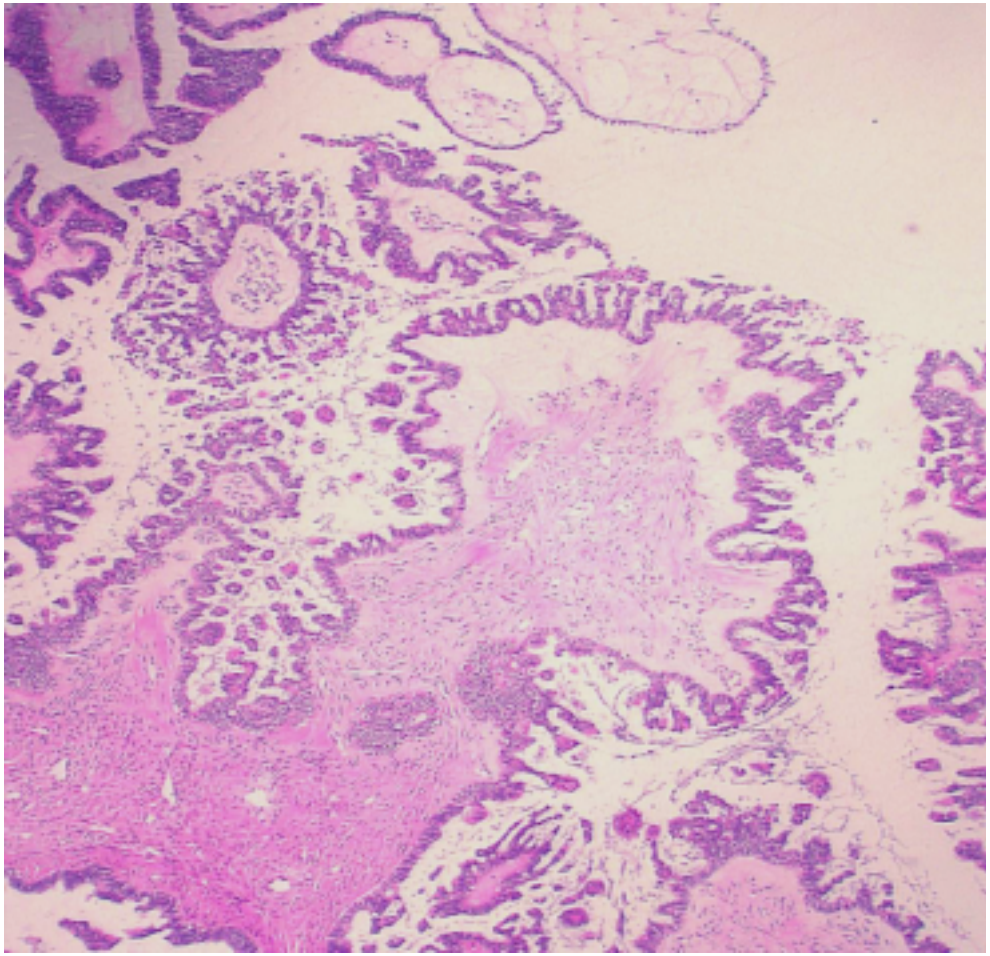
Benign serous tumors:



Borderline serous tumors

- more **complex architecture**
- mild cytologic atypia
- but **no** stromal invasion.
- might be associated with peritoneal implants
- Prognosis intermediate between benign and malignant types (survival with peritoneal metastases 75%)

Borderline serous tumors:



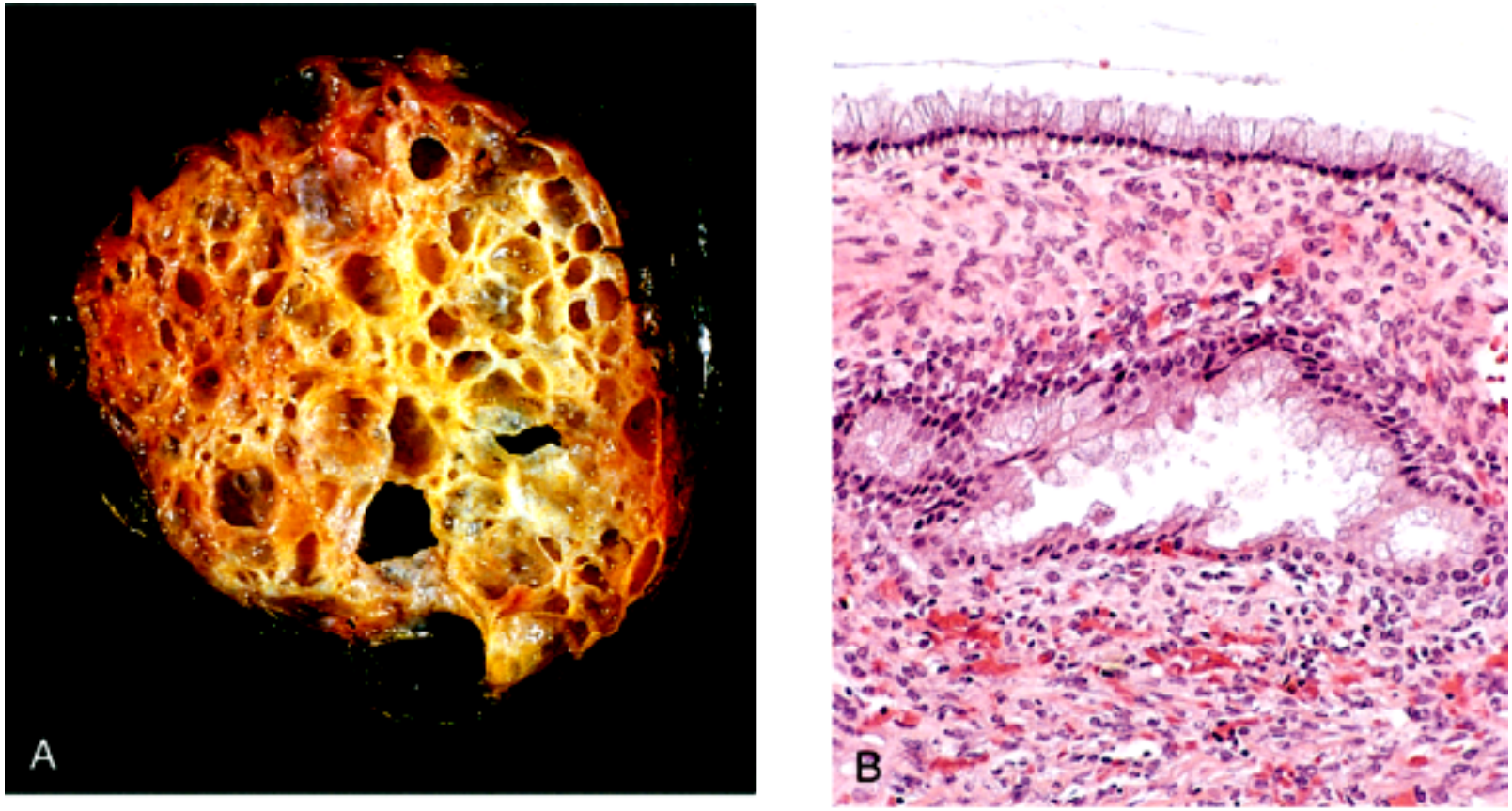
Malignant serous carcinoma

- Anaplasia of cells and invasion of the stroma.
- prognosis poor, depends on stage at the time of diagnosis.

2- Mucinous ovarian tumors

- **mucin-secreting** cells.
- Depending on the architectural complexity:
- **80% benign.**
- 10% low malignant potential (borderline)
- **10% malignant***(cystadenocarcinoma),*
- **large** and **multilocular**.
- psammoma bodies **not** found
- stage is major determinant of prognosis

Mucinous ovarian tumors



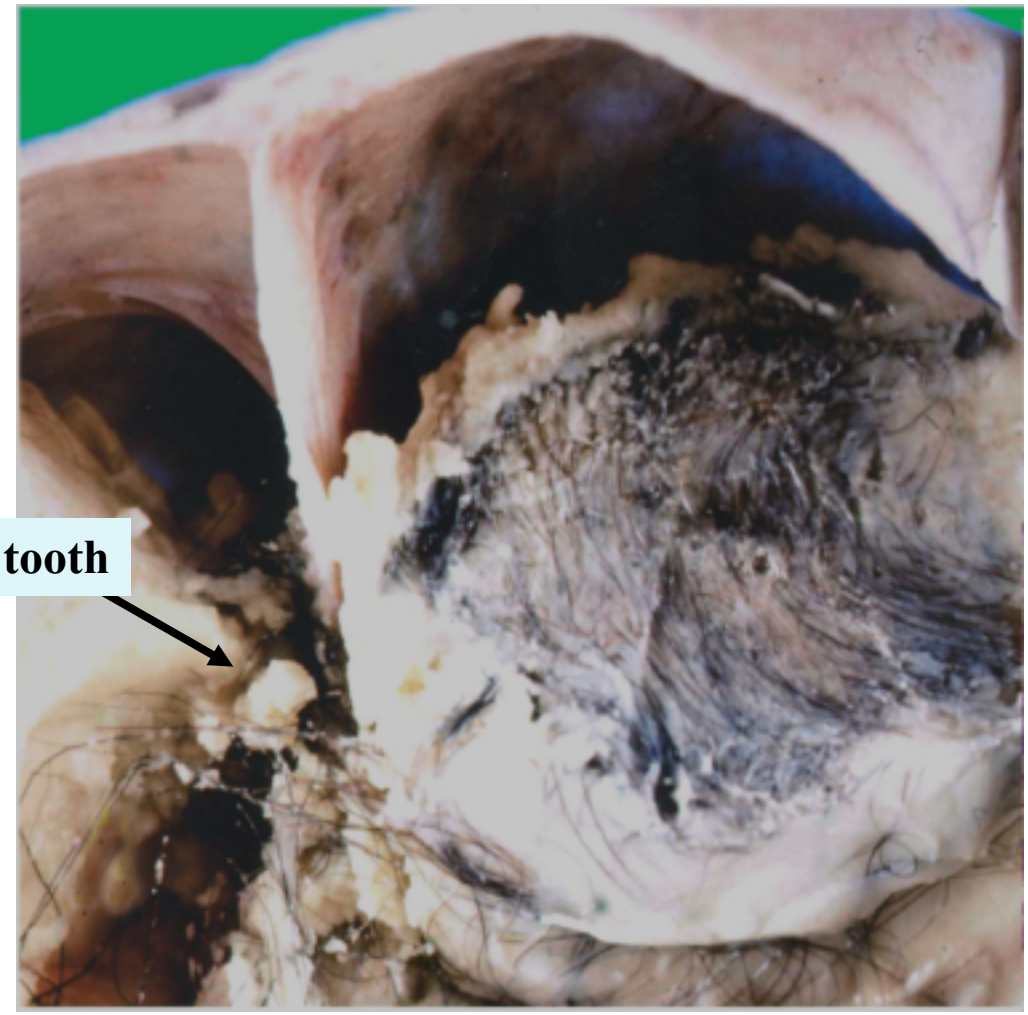
3- Ovarian Endometrioid Carcinoma

- similar to endometrium
- usually malignant.
- bilateral (30%)
- mutations in ***PTEN*** *tumor* suppressor gene

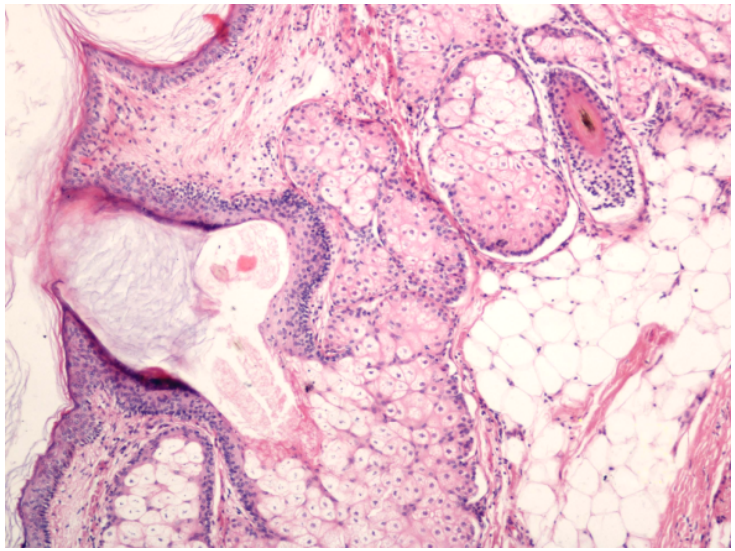
Germ cell tumors

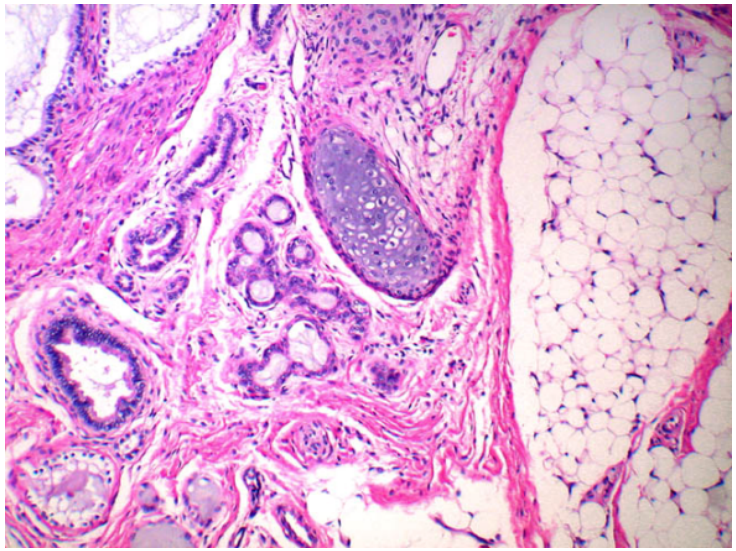
- ***Benign (Mature) Cystic Teratomas:*** totipotential germ cells into mature tissues of all three germ cell layers
- Most discovered incidentally
- 90% unilateral
- Grossly: cyst filled with sebaceous secretion and hair; bone and cartilage; epithelium, or teeth.
- 1% → malignant transformation
- torsion (10% to 15% of cases)

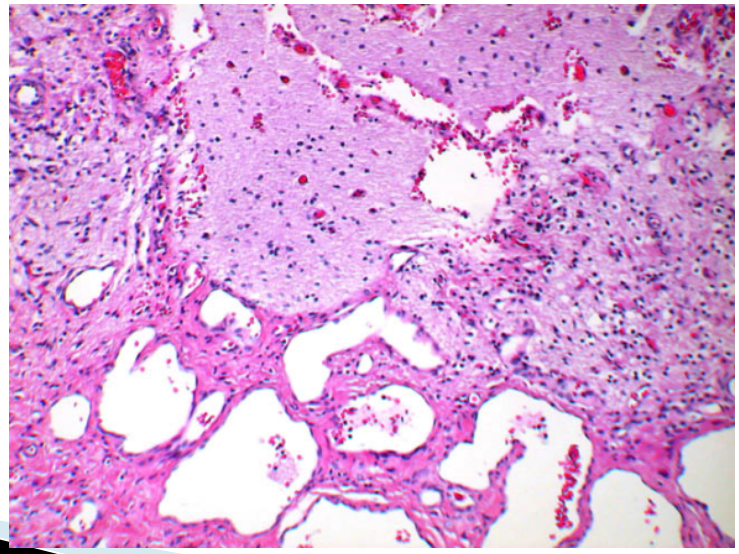
Benign (Mature) Cystic Teratomas

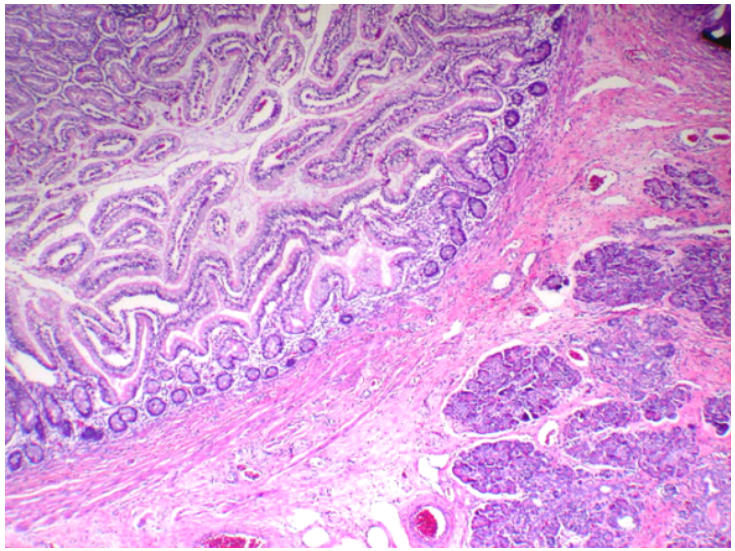


Benign (Mature) Cystic Teratomas









Germ-Cell tumors	Peak incidence	location	Morphology	Behavior
Dysgerminoma	Second to third decades (gonadal dysgenesis)	90% unilateral	Solid large to small gray masses. Sheets or cords of large cleared cells separated by scant Stroma contain ing lymphocytes granuloma.	All malignant; radiosensitive with 80% cure.
Choriocarcinoma	First three decades of life	Unilateral	small, hemorrhagic focus with two types of epithelium; cytotrophoblast and syncytiotrophoblast.	Metastasizes early and widely. ovarian primaries are resistant to chemotherapy.
Metastases to Ovary	Older ages	bilateral	Cells may be "signet-ring" mucin-secreting.	Primaries are gastrointestinal tract (Krukenberg tumors), breast, and lung.

Sex Cord Tumors	Peak incidence	location	Morphology	Behavior
Granulosa	Most postmenopausal	Unilateral	Composed of mixture of cuboidal granulosa cells in cords, sheets, or strands. Call-Exner bodies.	elaborate large amounts of estrogen so may promote endometrial or breast carcinoma.
Thecoma-fibroma	Any age	Unilateral	Solid gray fibrous cells to yellow (lipid-laden) plump thecal cells.	may produce ascites and hydrothorax (Meigs syndrome). Rarely malignant.
Sertoli-Leydig cell	All ages	Unilateral	Usually small, gray to yellow-brown, and solid.	masculinizing or defeminizing. Rarely malignant.

Clinical Correlations for All Ovarian Tumors

- with few exceptions, usually produce no symptoms /signs until well advanced.
- clinical presentation of all is similar:
- pain, gastrointestinal complaints, urinary frequency, torsion producing severe abdominal pain mimicking an "acute abdomen."
- Ascites (in Fibromas and malignant serous tumors).
- Functioning ovarian tumors often come to attention because of hormonal production (Estrogens or androgens).