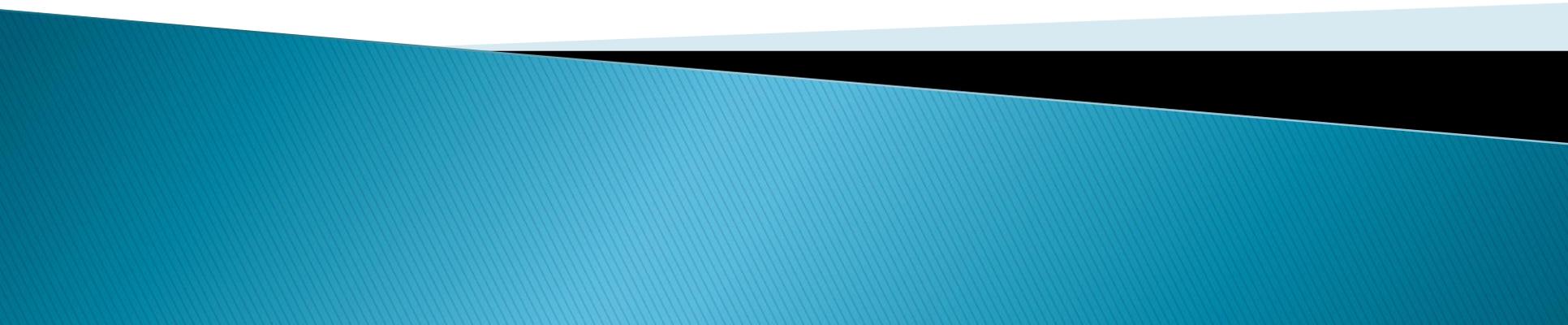


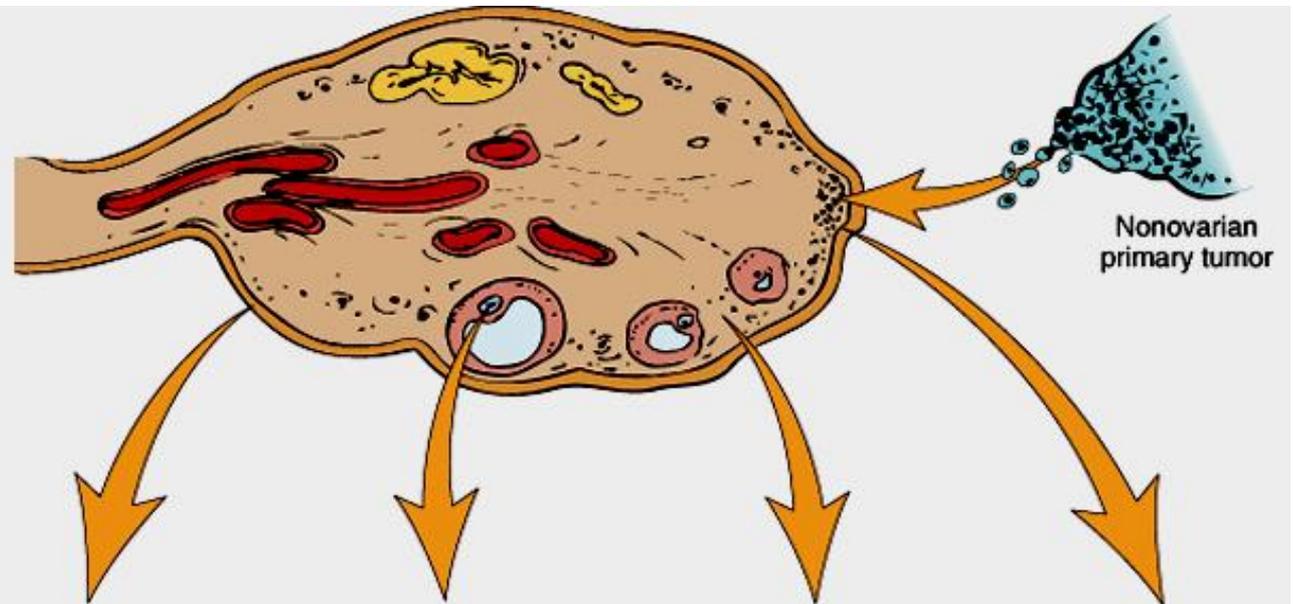
Ovarian Pathology



Ovarian Neoplastic Diseases

- ▶ 5th most common cancer in women.
- ▶ 5th leading cause of cancer death in women.
- ▶ 3 Origins of primary ovarian tumors:
 - 1- surface (coelomic) epithelium**
 - 2- germ cells**
 - 3- 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 | <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 | <ul style="list-style-type: none"> • Fibroma • Granulosa-theca cell tumor • Sertoli-Leydig cell tumor | |

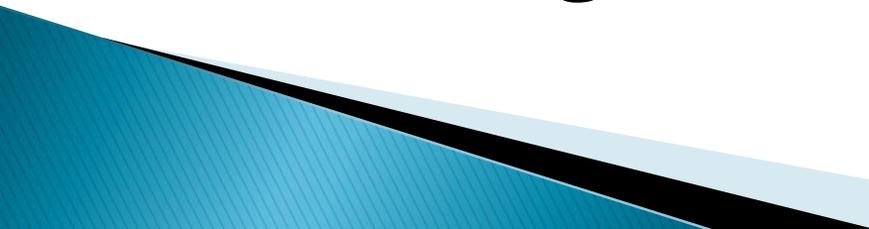
Pathogenesis-familial cases

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

Pathogenesis- sporadic cases

- ▶ *BRCA* mutations: 10% of sporadic cases
- ▶ other important molecular pathways:
- ▶ *p53* (50%)
- ▶ **HER2/NEU** over-expression (35%)
- ▶ **K-RAS** protein over-expression (30%)
(mucinous)

SURFACE EPITHELIAL TUMORS-types:

- ▶ **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 cancers
- ▶ ***p53*** and ***BRCA1*** mutations → High-grade serous carcinomas

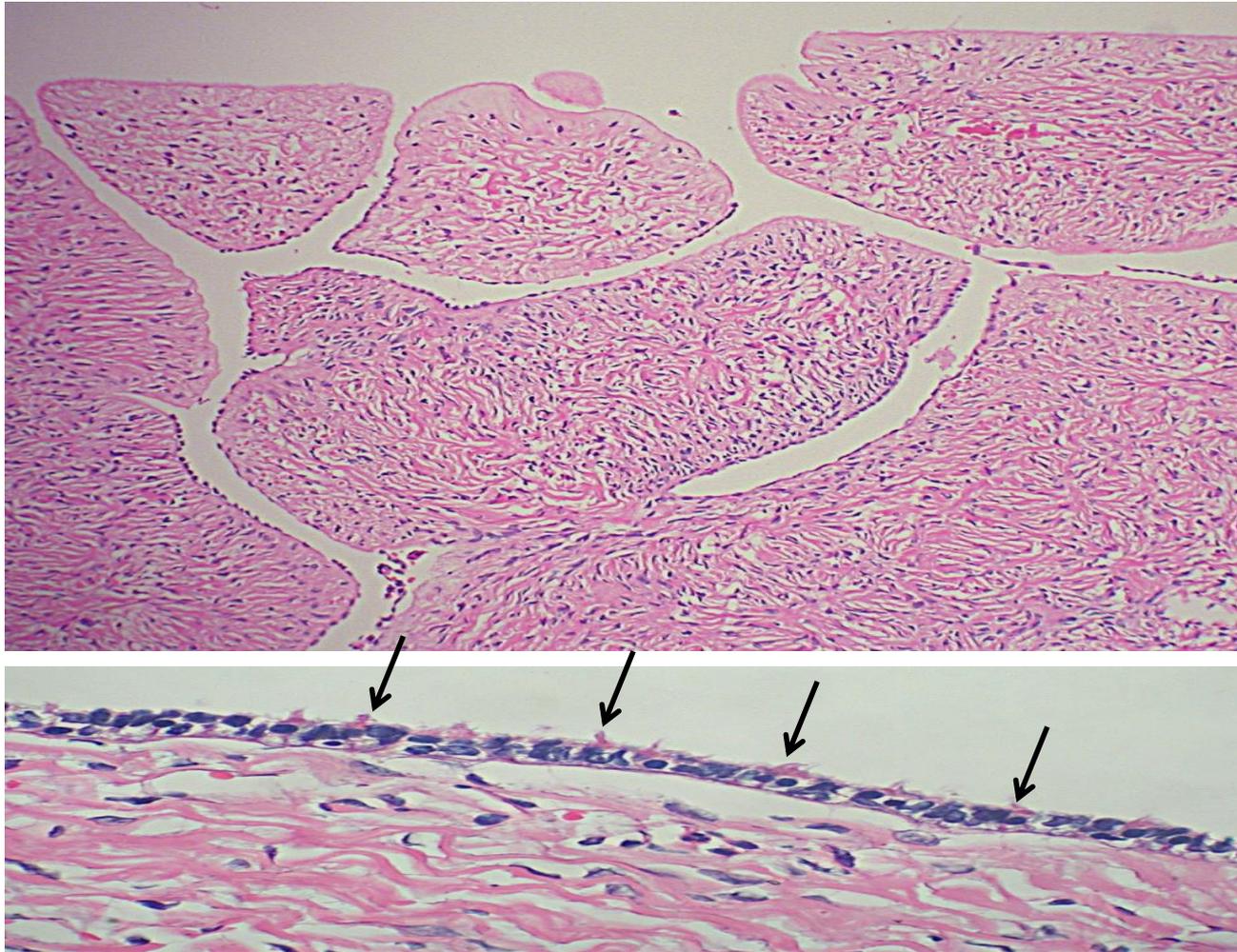
Morphology

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

SEROUS CYSTADENOMA

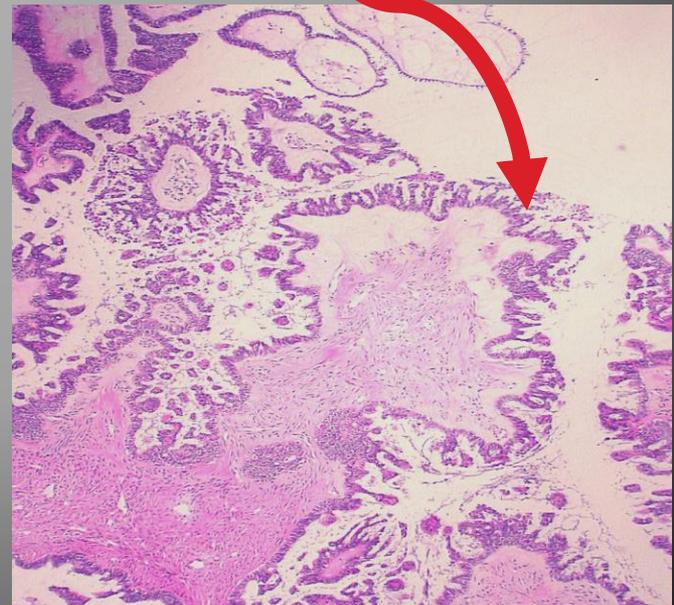


Benign serous tumors:



Borderline serous tumors

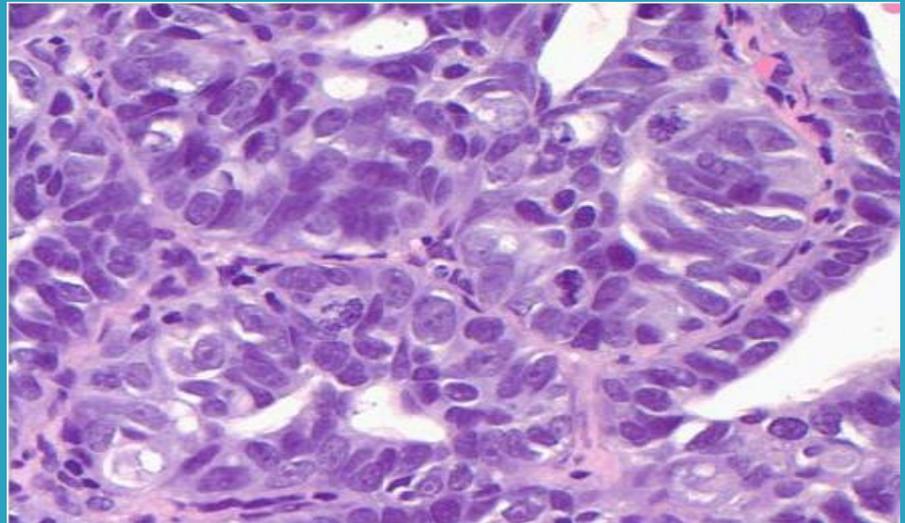
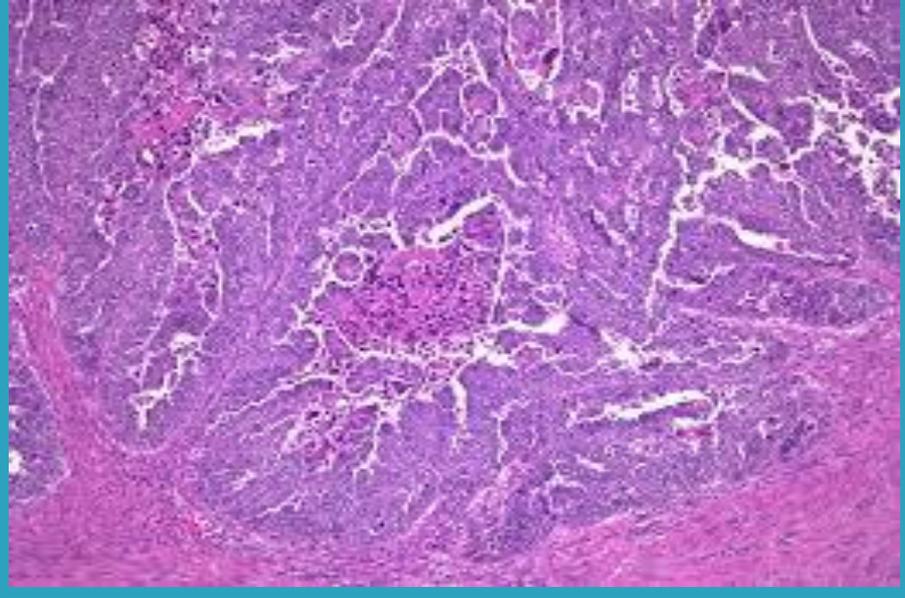
- ▶ more **complex architecture**
- ▶ mild cytologic atypia
- ▶ but **no stromal invasion**.
- ▶ might be associated with peritoneal implants
- ▶ Prognosis intermediate between benign and malignant types (survival with peritoneal metastases 75%)



Malignant serous carcinoma

Anaplasia of cells
and invasion of
the stroma.

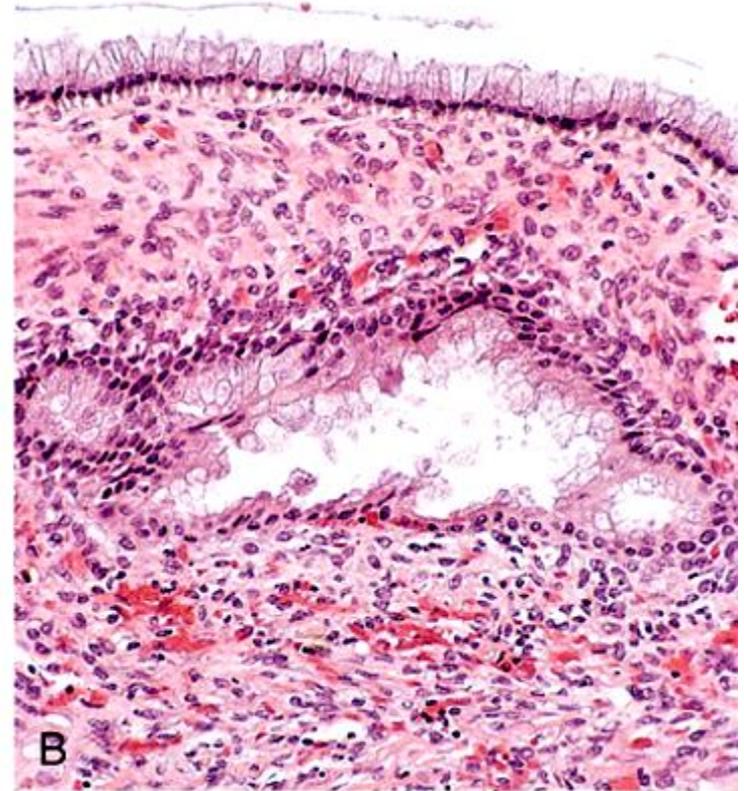
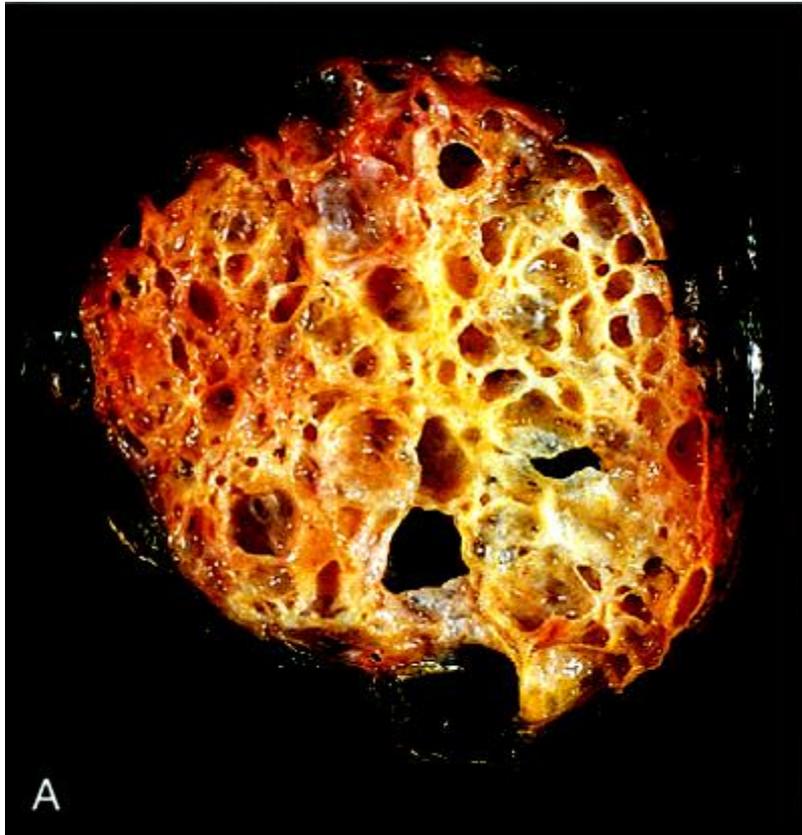
prognosis poor,
depends on stage
at the time of
diagnosis.



2- Mucinous ovarian tumors

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

Mucinous ovarian tumors

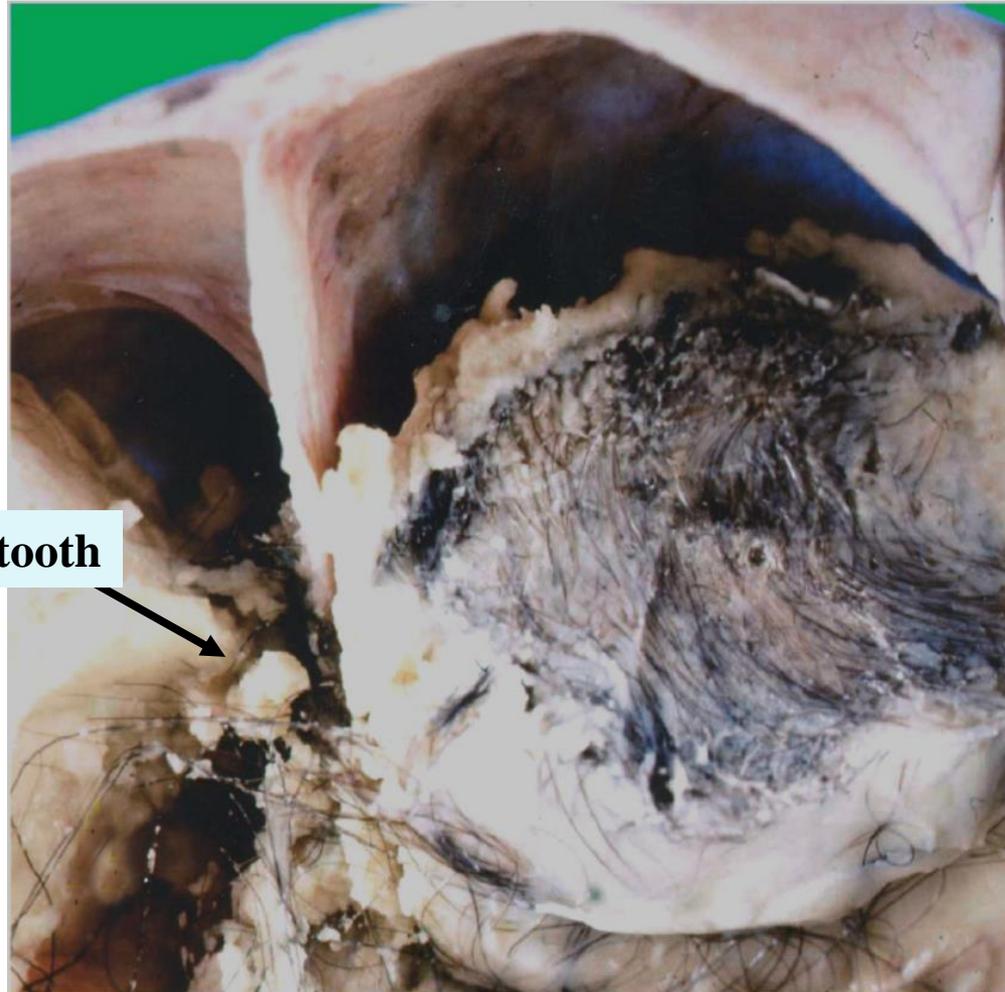


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Germ cell tumors

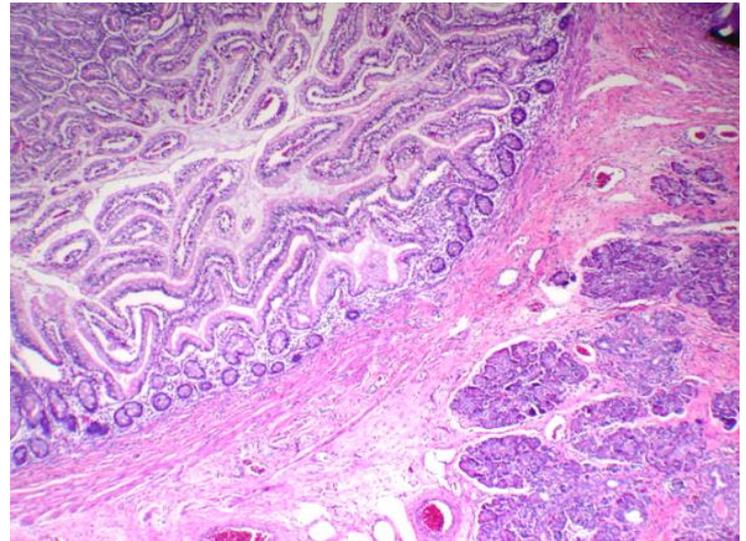
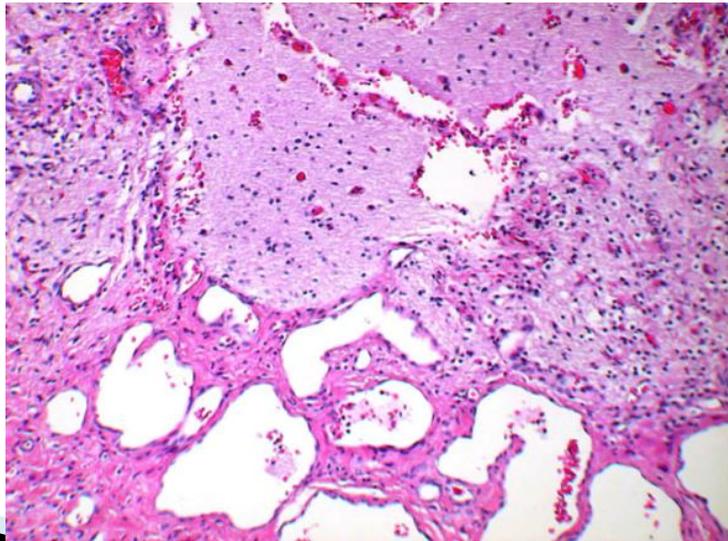
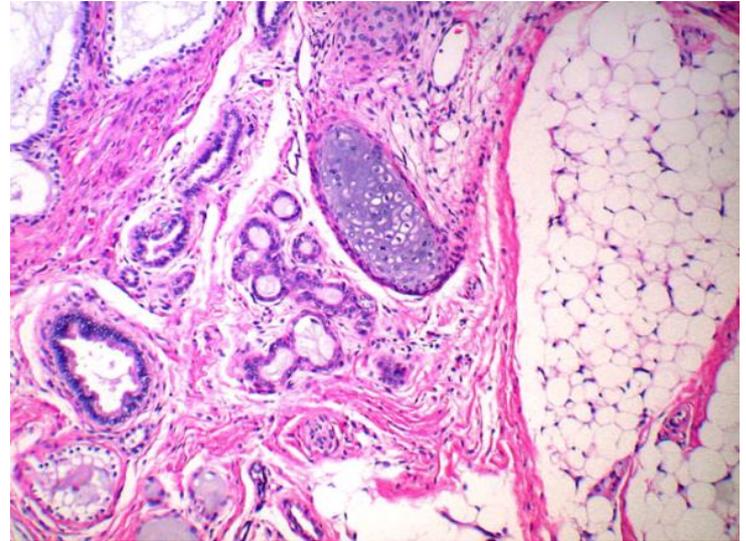
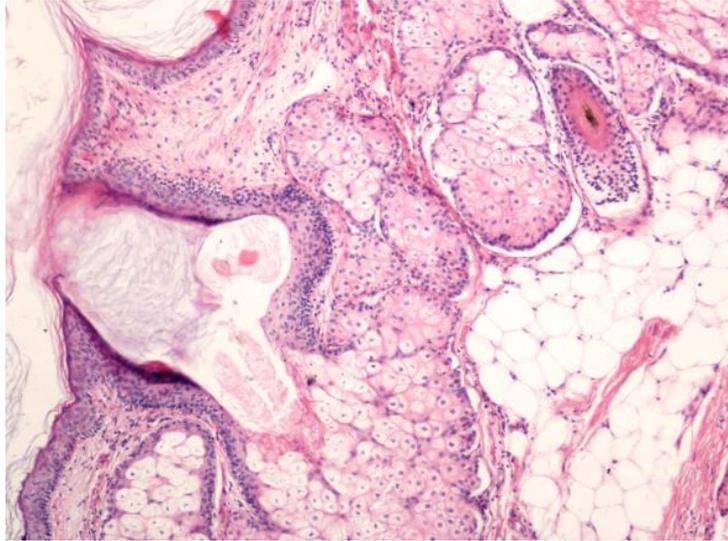
- ▶ ***Benign (Mature) Cystic Teratomas:***
- ▶ totipotential germ cells into mature tissues of all three germ cell layers
- ▶ Most discovered incidentally
- ▶ 90% unilateral
- ▶ Grossly: cyst filled with sebaceous secretion and hair; bone and cartilage; epithelium, or teeth.
- ▶ 1% → malignant transformation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

Benign (Mature) Cystic Teratomas



tooth

Benign (Mature) Cystic Teratomas



Clinical Correlations for All Ovarian Tumors

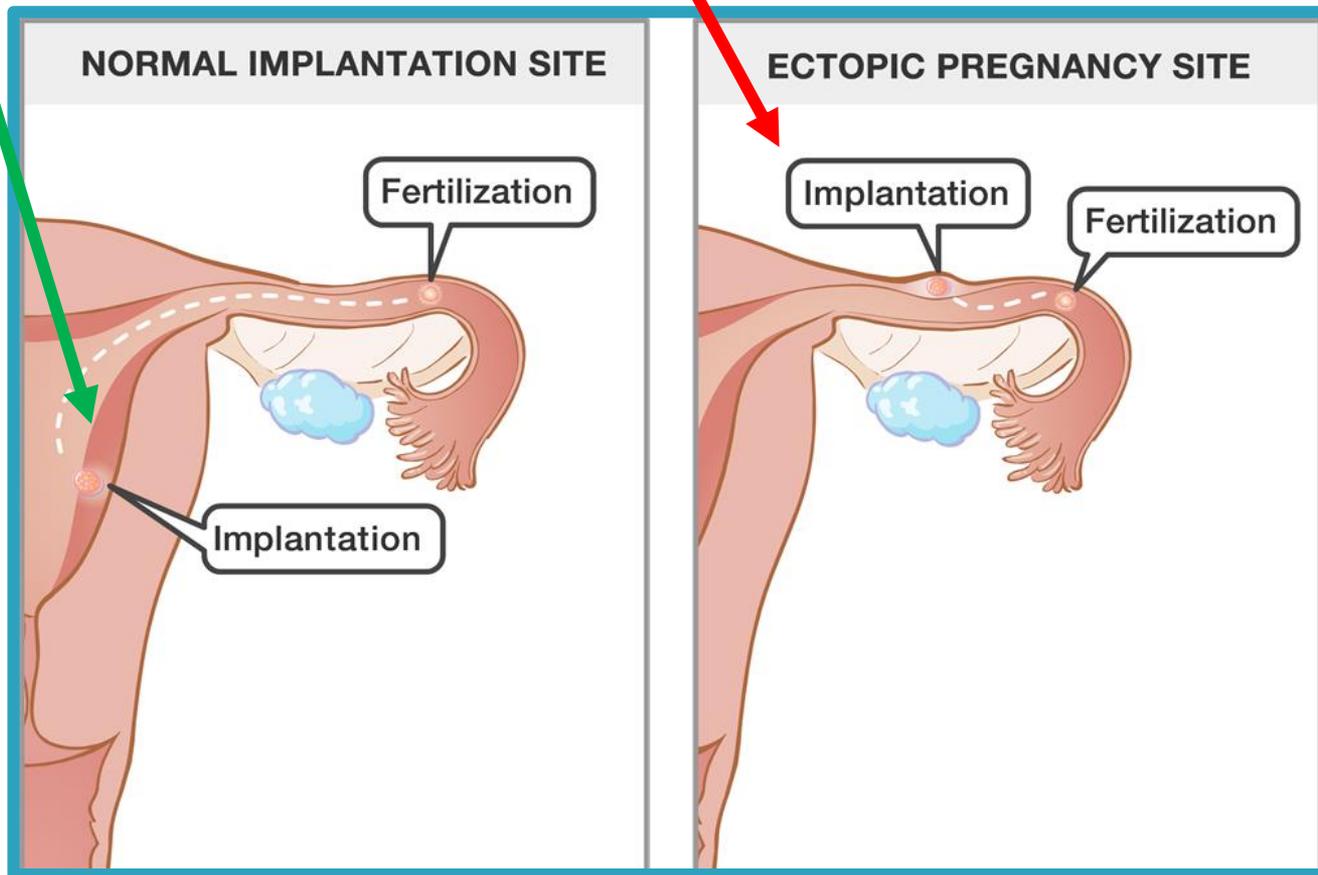
- ❖ clinical presentation of all is similar:
- ❖ pain, gastrointestinal complaints, urinary frequency; rarely torsion producing severe abdominal pain mimicking an "acute abdomen."
- ❖ Ascites (in Fibromas and malignant serous tumors).
- ❖ Functioning ovarian tumors often come to attention because of hormonal production (Estrogens or androgens).

Pathology of the Fallopian tubes

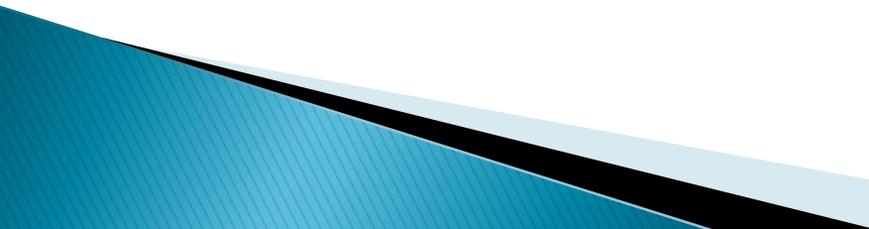
ECTOPIC PREGNANCY

- ▶ implantation of the fertilized ovum outside uterus
- ▶ Incidence: 1%
- ▶ 90% of cases → 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.

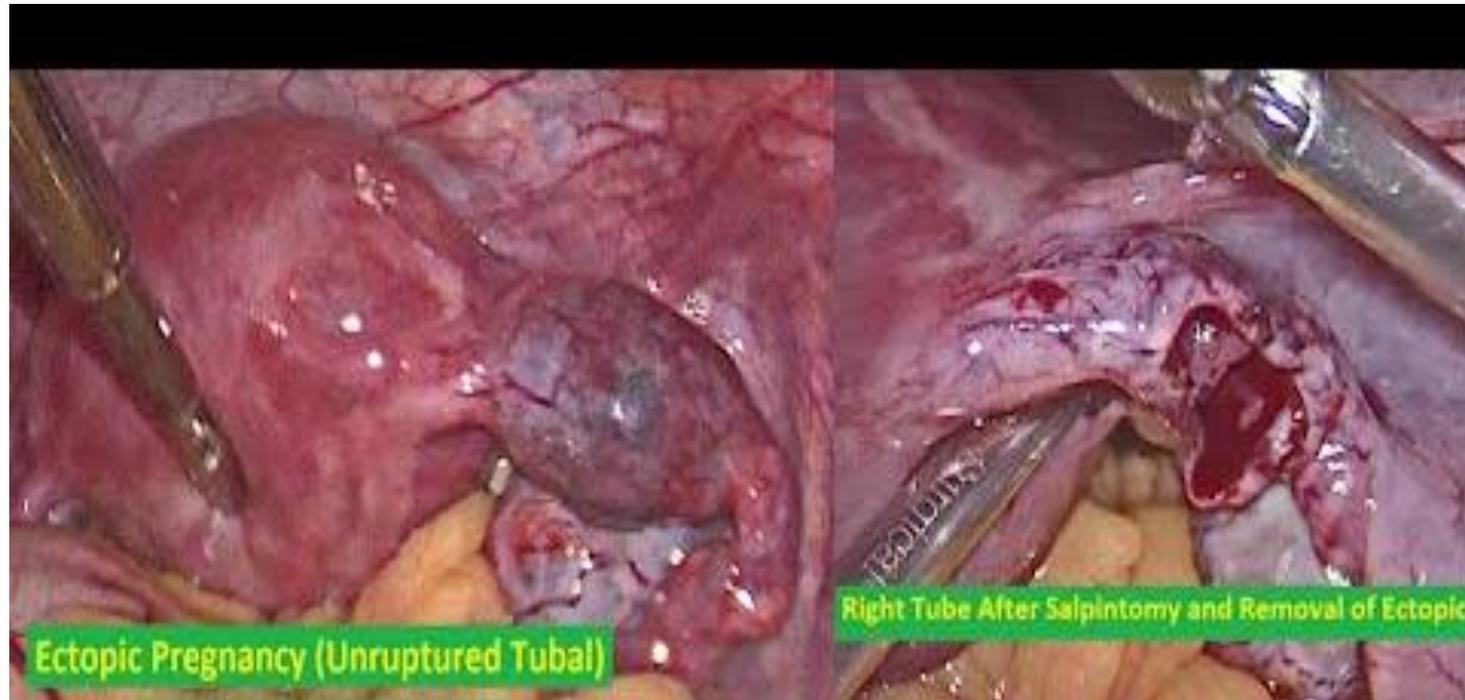
Normal versus ectopic pregnancy



ECTOPIC PREGNANCY

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

Ectopic pregnancy- Management



Tubal malignancies

- ▶ considered rare.
- ▶ **most common histo. type is serous carcinoma.**
- ▶ increased in women with ***BRCA mutations*** (In studies of prophylactic oophorectomies:10% →occult foci of malignancy in fimbria).
- ▶ **Because of access to peritoneal cavity**, fallopian tube carcinomas frequently spread to omentum and peritoneal cavity at time of presentation (advanced).