Fallopian Tube

**Most common diseases:**
- Inflammation - as part of pelvic inflammatory disease
- Ectopic pregnancy
- Endometriosis
- Primary tumors - quite rare

**Entry of organisms:**
- Organisms transit from cervix through uterus to tubes
- Most commonly occurs during menses
  - loss of mucus plug at cervical os
  - backflow of blood into the tubes from uterus

Pelvic Inflammatory Disease

**Symptoms:**
- Lower abdominal pain and abnormal vaginal discharge
- Can produce only minor symptoms - esp. when caused by chlamydia
- Uncommonly, fever, RUQ pain, irregular bleeding

Fallopian Tube

**Most common causes of PID**
- Chlamydia trachomatis
- Neisseria gonorrhoea
- Anaerobes - *bacteroides*
- Mycoplasma

**Possible outcomes of PID:**
- Tuboovarian abcesses
- Infertility
- Ectopic pregnancy
- Hydrosalpinx
## Ectopic Pregnancy

**General features:**

- *Pregnancy in which implantation is somewhere other than endometrium*
- 95% are in the fallopian tube
- Risk factors: PID, previous tubal surgery, IVF, IUDs, Progestin contraception

## Ovaries

### Follicle and luteal cysts:

- Extremely common
- Result from *unruptured graafian follicles* or ruptured follicles that reseal
- Often multiple and under serosal surface
- Usually small (1-2 cm) - rarely 2-5 cm

## Ovaries

### Most common diseases:

- Infrequently primary site of significant disease - *except neoplasms*
- Non-neoplastic cysts common, but rarely significant
- Primary inflammations are rarities

## Ovaries

### Polycystic ovarian syndrome (PCO):

- Multiple cystic follicles and follicle cysts
- *Hormonal abnormalities* - excessive androgen, high LH, low FSH
- *Stein-Leventhal syndrome* - PCO, oligo-menorrhea, persistent anovulation, obesity (40%), hirsutism (50%)

## Polycystic Ovaries

### Pathology:

- Ovaries are twice normal size
- Grey white - smooth surface with cysts
- Thickened outer tunica - *cortical fibrosis*
- Cysts have granulosa layer and *hyperplastic luteinized theca interna*
- Absence of corpora lutea
Ovarian Neoplasms

Surface Epithelial Neoplasms

Histologic types:
- Serous tumors - fallopian tube
- Mucinous tumors - endocervical / intestinal
- Endometrioid tumors - endometrium
- Clear cell tumors - endometrium
- Transitional cell tumors (Brenner tumors)

Serous Tumors

General considerations:
- Characteristic feature - ciliated cells
- Most frequent ovarian tumors - 30% of all
- 60% benign, 15% "borderline, 25% malignant
- 60% of malignant ovarian tumors

Serous Neoplasms

General considerations:
- Can be benign, of uncertain malignant potential ("borderline"), or malignant
- Benign frequently mixed with stromal components (adenofibroma)
- Usually cystic (cystadenoma or cystadenocarcinoma) but can be solid
### Serous Tumors

**Low malignant potential:**

- Also known as "borderline" or "LMP"
- Prognosis determined by whether peritoneal implants present and type
- 100% 5 yr survival if confined to ovary
- *If penetrated capsule 80% 10 yr survival*

### Surface Epithelial Neoplasms

**Histologic types:**

- Serous tumors - *fallopian tube*
- Mucinous tumors - *endocervical / intestinal*
- Endometrioid tumors - *endometrium*
- Clear cell tumors - *endometrium*
- Transitional cell tumors (Brenner tumors)

### Serous Tumors

**Low malignant potential:**

- Show epithelial proliferation - budding of epithelium - *detached cell clusters*
- Mitotically active - *but not florid*
- Nuclear atypia
- *Absence of destructive stromal invasion*

### Mucinous Tumors

**General considerations:**

- Characteristic feature - *mucinous cells, can be intestinal or endocervical type*
- Much less common than serous tumors
- Can be associated with tumors at other sites - appendix and cervix
- Must rule out metastatic tumors

### Serous Tumors

**Papillary serous carcinoma:**

- Significant nuclear atypia
- Are usually papillary - unless poorly diff
- *Demonstrate frank stromal invasion*
- *Psammoma bodies are typically seen*

### Mucinous Tumors

**Carcinoma:**

- 10% of ovarian carcinomas
- *Important to rule-out metastatic GI cancers*
- May be show either endocervical or intestinal type differentiation - often both or "in between"
Endometrioid Tumors

**Carcinoma:**
10-20% of ovarian carcinomas
Closely resemble endometrial carcinomas
Often arise in association with endometriosis
40-50% have squamous differentiation

Germ Cell Tumors

**General considerations:**
Neoplasms of germ cell origin
About 30% of ovarian neoplasms
Both malignant and benign forms
Usually occur in children / young women
Over 95% are benign cystic teratomas

Clear Cell Tumors

**General considerations:**
Benign and borderline quite uncommon;
are exceptional < 1% of borderline tumors
Account for 6% ovarian carcinomas
25% of carcinomas have pelvic endometriosis

Germ Cell Tumors

**Three general groups:**
Immature germ cell tumors
Mature germ cell tumors (BCT)
Benign cystic teratoma giving rise to malignant neoplasm

Grading of Ovarian Common Epithelial Carcinomas
Shimizu et al.

<table>
<thead>
<tr>
<th>Architecture</th>
<th>GRADE</th>
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<tbody>
<tr>
<td>Glandular</td>
<td>Grade 1</td>
</tr>
<tr>
<td>Papillary</td>
<td>Grade 2</td>
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<tr>
<td>Solid</td>
<td>Grade 3</td>
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<table>
<thead>
<tr>
<th>Mitotic Activity</th>
<th>GRADE</th>
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</thead>
<tbody>
<tr>
<td>&lt; 10 / 10 HPF</td>
<td>Grade 1</td>
</tr>
<tr>
<td>10-24 / 10 HPF</td>
<td>Grade 2</td>
</tr>
<tr>
<td>≥ 25 / 10 HPV</td>
<td>Grade 3</td>
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</tbody>
</table>

<table>
<thead>
<tr>
<th>Nuclear Features</th>
<th>GRADE</th>
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<tbody>
<tr>
<td>Uniform, no nucleoli</td>
<td>Grade 1</td>
</tr>
<tr>
<td>Intermediate variation, small nucleoli</td>
<td>Grade 2</td>
</tr>
<tr>
<td>Highly variable, bizarre cells, nucleoli</td>
<td>Grade 3</td>
</tr>
</tbody>
</table>

Germ Cell Tumors

**Immature germ cell tumors:**

Immature teratoma (immature somatic tissues)
Endodermal sinus tumor (extraembryonic differentiation)
Dysgerminoma (immature germ cells)
Embryonal carcinoma (early embryonic development)
## Benign Cystic Teratoma

**Clinical features:**
- Most common benign tumor in women of reproductive age
- Most common tumor in pregnancy
- 5 times more likely in children than a malignant germ cell tumor
- 2/3rds asymptomatic when diagnosed

## Sex Cord / Stromal Neoplasms

**Histologic types:**
- Granulosa cell tumors
- Sertoli - Leydig cell tumors
- Fibroma / thecomas
- Unclassified forms

## Benign Cystic Teratoma

**Key features:**
- Ectodermal differentiation of totipotential germ cells
- Usually a cystic structure lined by epidermis with adnexal structures
- All elements are mature
- Ovarian masses in young women

## Granulosa Cell Tumors

**General considerations:**
- Two types - adult and juvenile forms
- Unilateral 95% of the time
- Average age mid-50's for adult form
- Slow growing - act in a benign fashion
- Often estrogenic - endometrial cancer

## Sex cord / Stromal Tumors

**General considerations:**
- Tumors composed of granulosa cells, theca cells, Sertoli cells, Leydig cells, and fibroblasts of stromal origin
- About 8% of ovarian neoplasms

## Fibroma / Thecomas

**General considerations:**
- Benign tumors derived from ovarian stromal fibroblasts
- Can differentiate towards theca interna - thecoma (usually postmenopausal)
- If differentiate towards stroma - fibroma (avg age 48 yrs)