Fallopian Tube

Most common diseases:

- Inflammation - as part of pelvic inflammatory disease
- Ectopic pregnancy
- Endometriosis
- Primary tumors - quite rare

Pelvic Inflammatory Disease

Pelvic inflammatory disease — Initial visits to physicians’ offices by women 15-44 years of age: United States, 1980–2000

SOURCE: National Disease and Therapeutic Index (IMS America, Ltd.)
**Fallopian Tube**

*Most common causes of PID*

- *Chlamydia trachomatis*
- *Neisseria gonorrhoea*
- Anaerobes - *bacteroides*
- Mycoplasma

**Fallopian Tube**

*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

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

Most common diseases:

Infrequently primary site of significant disease - except neoplasms

Non-neoplastic cysts common, but rarely significant

Primary inflammations are rarities
Non-neoplastic Ovarian Cysts

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

**Polycystic ovarian syndrome (PCO):**

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

**Polycystic Ovaries**

**Pathology:**

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

<table>
<thead>
<tr>
<th></th>
<th>Surface Epithelium</th>
<th>Germ Cell</th>
<th>Sex Cord - Stroma</th>
<th>Mets to ovary</th>
</tr>
</thead>
<tbody>
<tr>
<td>Frequency</td>
<td>65 - 70%</td>
<td>15 - 20%</td>
<td>5 - 10%</td>
<td>5%</td>
</tr>
<tr>
<td>% of CA</td>
<td>90%</td>
<td>3 - 5%</td>
<td>2 - 3%</td>
<td>5%</td>
</tr>
<tr>
<td>Age group</td>
<td>20+ yrs</td>
<td>0 -25+ yrs</td>
<td>All ages</td>
<td>Variable</td>
</tr>
</tbody>
</table>
Surface Epithelial 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

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

<table>
<thead>
<tr>
<th></th>
<th>Benign</th>
<th>&quot;Borderline&quot;</th>
<th>Malignant</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Epithelial only</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>solid</td>
<td>Adenoma</td>
<td>Serous tumor</td>
<td>Papillary serous</td>
</tr>
<tr>
<td>cystic</td>
<td>Cystadenoma</td>
<td>uncertain malignant potential</td>
<td>carcinoma</td>
</tr>
<tr>
<td><strong>Epithelial / stromal</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>solid</td>
<td>Adenofibroma</td>
<td>Carcino-</td>
<td></td>
</tr>
<tr>
<td>cystic</td>
<td>Cystadenofibroma</td>
<td>sarcoma</td>
<td></td>
</tr>
</tbody>
</table>
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

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
Serous Tumors

Papillary serous carcinoma:

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

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)
### 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

---

**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

### Clear Cell Tumors

**General considerations:**

- Benign and borderline quite uncommon; < 1% of borderline tumors
- Account for 6% ovarian carcinomas
- 25% of carcinomas have pelvic endometriosis
## Grading of Ovarian Common Epithelial Carcinomas

*Shimuz et al.*

<table>
<thead>
<tr>
<th>Architecture</th>
<th>GRADE</th>
</tr>
</thead>
<tbody>
<tr>
<td>Glandular</td>
<td>Grade 1: 3-5 pts</td>
</tr>
<tr>
<td>Papillary</td>
<td>Grade 2: 6-7 pts</td>
</tr>
<tr>
<td>Solid</td>
<td>Grade 3: 8-9 pts</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Mitotic Activity</th>
<th>GRADE</th>
</tr>
</thead>
<tbody>
<tr>
<td>&lt; 10 / 10 HPF</td>
<td>Grade 1: 3-5 pts</td>
</tr>
<tr>
<td>10-24 / 10 HPF</td>
<td>Grade 2: 6-7 pts</td>
</tr>
<tr>
<td>&gt; 25 / 10 HPV</td>
<td>Grade 3: 8-9 pts</td>
</tr>
</tbody>
</table>

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

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### 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*
Germ Cell Tumors

Three general groups:

- Immature germ cell tumors
- Mature germ cell tumors (BCT)
- Benign cystic teratoma giving rise to malignant neoplasm

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

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
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

Sex Cord / Stromal Neoplasms

Histologic types:

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

---

**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)*