**Case 4 History**

- 43 year old Mexican woman
- Bilateral ovarian tumors and peritoneal metastases
- Review of the history revealed that she had had a gastric resection 7-8 years previously (at age 35-36), but the pathologic findings were unknown.
Case 4 Gross Pathology

- The ovaries were solid and moderately enlarged
- The left ovary measured 7 cm and the right ovary 8 cm
- The cut surfaces were gray-white, rubbery and lobulated
Case 4 Diagnosis

Bilateral Metastatic Signet Ring Cell Adenocarcinoma, Stomach Primary “Krukenberg Tumors”

Discussion Points

• General Features of metastatic carcinoma in the ovary
• Some specific types
  – Signet ring cell carcinoma: Krukenberg Tumor
  – Metastatic colorectal carcinoma

Metastases in the Ovary

• 5-10% of apparent primary neoplasms
• Nonspecific symptoms: pain, GI disturbances, abnormal bleeding, palpable mass
• Routes: Retrograde lymphatic, transperitoneal, hematogenous
### Ovarian Metastases

#### Non Genital Primary Sites

<table>
<thead>
<tr>
<th>Primary Site</th>
<th>Number</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td>Colorectal</td>
<td>19</td>
<td>32.3</td>
</tr>
<tr>
<td>Appendix</td>
<td>12</td>
<td>20.3</td>
</tr>
<tr>
<td>Breast</td>
<td>5</td>
<td>8.5</td>
</tr>
<tr>
<td>Stomach</td>
<td>4</td>
<td>6.8</td>
</tr>
<tr>
<td>Small intestine</td>
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<td>6.8</td>
</tr>
<tr>
<td>Pancreas</td>
<td>3</td>
<td>5.1</td>
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<tr>
<td>Other / unknown</td>
<td>12</td>
<td>20.3</td>
</tr>
</tbody>
</table>

Moore RG et al, Gynecol Oncol 2004; 93:87-91

#### Ovarian Metastases

**General Features**

- Bilateral
- Small size, especially if mucinous
- Multiple nodules
- Cystic, solid and cystic, solid
- Implants on or just beneath surface
- Haphazard infiltration of desmoplastic stroma
- Tumor emboli in lymphatic spaces
- Unusual pattern or disproportionate nuclear grade

#### Krukenberg Tumor

- Stomach most common primary site
- Rare in U.S., common in Japanese
- Can occur in young women (17% < 30)
- Average age with stomach primary 42
- Metastatic until proven otherwise
- ? Primary Krukenberg tumor
**Krukenberg Tumor**

- Signet ring cells account for at least 10%
- Mucin free epithelial cells
- Small glands with flattened lining cells
- Larger glands of intestinal/mucinous type
- Fibrous stroma – densely cellular to edematous
- Extracellular mucin