Adnexal Masses: Pearls

- T1 Hyperintensity
- T2 Hypointensity
- Tubular Configuration
- Papillary Projections
- Mucinous Cystadenoma
- Peritoneal Implants
Adnexal Masses: Pitfalls

- Lipid Poor Mature Cystic Teratoma
- Peritoneal Inclusion Cyst
T1 Hyperintensity: DDX

- Fat
- Hemorrhage
- Protein
- Flow
- Paramagnetic Effects
T1 Hyperintensity: DDX

- Mature Cystic Teratoma
- Endometrioma
- Functional Cyst
High Signal Intensity on T1
Loss of Signal Intensity with Fat Saturation

- Tissue is Characterized as Fat
- Dx: Mature Cystic Teratoma
↑ T1 SI with / without Fat Saturation

- Hemorrhage or Protein
- Multiple or Bilateral:
  - Specific for Endometriomas
- Single Lesion
  - ↓ T2 SI → Endometrioma
  - ↑ T2 SI → Functional Cyst
T2 Hypointensity: DDX

- Fibrosis
- Smooth Muscle
- Concentrated Protein / Blood
T2 Hypointensity: DDX

- Exophytic Leiomyoma
- Fibroma / Fibrothecoma
- Brenner Tumor
- Endometrioma
Exophytic Leiomyoma

- Separate Ipsilateral Ovary
- Bridging Vessel Sign
Fibroma-Fibrothecoma

- 50% of Sex Cord – Stromal Tumors
- > 95% Benign
- Fibrothecoma: Endometrial Hyperplasia in Postmenopausal Woman
- Large Fibroma: Meig’s Syndrome
Brenner Tumor

- < 1% Epithelial Ovarian Neoplasms
- >98% Benign
- Ovarian Transitional Cells Surrounds by Fibrosis
- 30% Ipsilateral or Contralateral Benign Ovarian Tumor
Tubular Configuration

• Radiography: One View is No View
• MR: One Plane is No Plane
  – Three Orthogonal Planes?
  – 3D isotropic voxel T2 – WI ?
• Tube Revealed on 1 of the 3 Orthogonal Planes
Dilated Fallopian Tube

- **Endometriosis**
  - $\uparrow$ T1 SI Content
  - Other Findings of Endometriosis
- **Pelvic Inflammatory Disease**
- **Prior Hysterectomy**
Papillary Projections

- QED: Epithelial Ovarian Neoplasm
- Not Specific for Malignancy
- T2 Zonal Anatomy
  - Inner ↓ SI Fibrous Core
  - Outer ↑ SI Edematous Stroma
Serous Ovarian Neoplasms

- **Serous Cystadenoma**
- **Serous Borderline Tumor (BOT)**
- **Low Grade Serous Cystadenocarcinoma (LGSC)**
- **High Grade Serous Cystadenocarcinoma (HGSC)**


Mucinous Cystadenoma

- Huge Adnexal Neoplasms
- Large Size ≠ Malignancy
- MR Imaging Features
  - Multiple Locules
  - No Ascites, Papillary Projections
  - Minimal T1 and T2 Shortening from Viscous Mucin
Peritoneal Implants

• Specific* (< 100%) for Malignancy
• In Setting of Ovarian Mass
  – Refer to Gyn Oncologist
  – Neoadjuvant Chemotherapy


http://radiographics.rsajnl.org/cgi/content/full/25/6/1689
Pitfall: Lipid Poor Teratoma

• < 5 % of Mature Cystic Teratoma
• In Phase and Opposed Phase
  Chemical Shift Imaging
• Specific Gravity
Pitfall: Peritoneal Inclusion Cyst

- Non-Pancreatic Pseudocyst
- Loculated Peritoneal Fluid Surrounds One or Both Ovaries
- Borders: Pelvic Peritoneal Cavity
- Not a Cystic Ovarian Neoplasm
Peritoneal Inclusion Cyst: Clinical Features

- Premenopausal Women
- Prior Surgery, Endometriosis
- Mesothelial Lining Cells Lose Ability to Absorb Fluid
- Rx: Aspirate, Sclerosing Agents
Samuel Clemens: Mark Twain

- Born: 175 years ago - 1835
- Died: 100 years ago: 1910
- Huck Finn: Published
  125 years ago: 1885
• “I was gratified to be able to answer promptly and I did”
• “I said I didn’t know”
CME Question: Comparing T1 weighted images with and without fat suppression is most useful in differentiating what two conditions

- A. Benign and Malignant serious neoplasms
- B. Hemorrhagic functional cysts and endometriomas
- C. Mature and immature teratomas
- D. Endometriomas and Mature cystic teratomas
- E. Lipoleiomyomas and Mature cystic teratomas

(Answer = D)