Conflicts to disclose - none
Ultrasound Evaluation of Pelvic Masses

- Adnexal masses
- Benign masses
- Malignant masses
- Other origins
Ultrasound principles

- Transducers convert electronic energy to sound energy
- Intermittent pulses of high frequency sound
- Emit and receive sound waves
- Echo is created with change in tissue density
Ultrasound principles

- In Ob/Gyn typically 3.5 - 7.0 megahertz (million cycles per second)
- Nearest zone is most precise image
- Far zone sound waves are more divergent
**Transvaginal Ultrasound**

- Proximity of probe to target organs
- Higher frequency probes
- Improved resolution
- Decreased depth of field
Keeping oriented

- 2 dimensional picture of a 3d structure
- Patient in dorsal lithotomy position
- Sagittal
  - Anterior (ventral) - left of screen
  - Posterior (dorsal) - right of screen
Keeping oriented

- Coronal - 90 degree rotation counterclockwise
  - Patient’s right - left of screen
  - Patient’s left - right of screen
- Transverse - only with abdominal U/S
Keeping oriented
Keeping oriented
Adnexa

- Lateral to uterus
- Underlying internal iliac vessels - in the inferolateral portion of the image
Adnexa - Normal ovary
Adnexa - Normal ovary
Adnexa - Normal ovary
Adnexa - PCOS
Adnexal Mass

- Cystic vs. solid
- Simple vs. complex
- Site of origin
- Size
- Evidence of metastases
- Ascites
## Adnexal Cyst Morphology

<table>
<thead>
<tr>
<th>Feature</th>
<th>Probability of Malignancy</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Low</td>
</tr>
<tr>
<td>Cyst Wall</td>
<td>Smooth</td>
</tr>
<tr>
<td>Wall thickness</td>
<td>&lt;3mm</td>
</tr>
<tr>
<td>Septations</td>
<td>None</td>
</tr>
<tr>
<td>Echogenicity</td>
<td>Cystic</td>
</tr>
</tbody>
</table>
Simple Cyst
Risk of Malignancy
\( (N=1304 \text{ Unilocalar Cysts}) \)

- Premenopausal = 927
- Postmenopausal = 377
- Group I
  - Echo-free, no papillary areas
- Group II
  - Echogenic cyst, solid areas, papillary areas

Ekerhovd, E et al AJOG 2001;184:48-54
Risk of Malignancy
(N= 1304 Unilocular Cysts)

Group I (Echo free)  Group II (Echogenic)
(N= 660)            (N= 644)

Pre  Post  Pre  Post
  0.73%  1.6%  2.1%  10.0%  

Ekerhovd, E et al AJOG 2001;184:48-54
Risk of Malignancy in Unilocular Cysts < 10 cm in Diameter

\(N=15,106\)

- 1987-2002
- > 50 y/o
- Mean follow up 6.3 years
- 2763 patients with 3259 cysts
  - Spontaneous resolution = 2261 (69.4%)
  - Developed a septum = 537 (16.5%)
  - Developed a solid area = 189 (5.8%)
  - Persisted as unilocular = 220 (6.8%)

Modesitt SC et al Obstet Gynecol 2003;1102:594-9
Risk of Malignancy in Unilocular Cysts < 10 cm in Diameter

(N=15,106)

- No woman with a persistent isolated unilocular cyst < 10 cm developed Ca
- Risk of malignancy with < 10cm unilocular cyst < 0.1%
- 27 cancers were diagnosed in the screening program during this time period
  - Stage I = 17
  - Stage II = 4
  - Stage III = 6

Modesitt SC et al Obstet Gynecol 2003;1102:594-9
Risk of Malignancy in Unilocular Cysts < 10 cm in Diameter
(N=15,106)

- 10 had transient simple cysts
  - 7/10 developed an additional abnormality
  - 2/10 had resolution of cyst and developed cancer later
  - 1/10 developed cancer in contra-lateral ovary
- 17 had no prior cyst

Sources:
Modesitt SC et al Obstet Gynecol 2003;1102:594-9
Risk of Malignancy in Unilocular Cysts < 10 cm in Diameter

(N=15,106)

- Surgical Pathology (n=117)
  - Serous cystadenoma 61
  - Serous cystadenofibroma 14
  - Mucinous cystadenoma 9
  - Parovarian cyst 9
  - Fibrothecoma 7
  - Endometrioma 5
  - Cystic teratoma 3
  - Mucinous cystadenofibroma 1
  - Benign other 8

Modesitt SC et al Obstet Gynecol 2003;1102:594-9
Risk of Malignancy in Unilocular Cysts < 10 cm in Diameter
(N=15,106)

Conclusions:
• Rate of spontaneous resolution = 69% (most within 3 months)
• Immediate surgical intervention is unwarranted
• Ultrasound follow up is indicated due to malignancy rate < 0.1%

Modesitt SC et al Obstet Gynecol 2003;1102:594-9
Septated cyst
Adnexa

- 33 yo G4P2A2 with 1 week history of left lower quadrant pain. History of right salpingo-oophorectomy for “cysts” 10 years ago.
Adnexa
Adnexa

- Hemorrhagic corpus luteum
Adnexa

- 37 yo G2P0 with history of 3 laparoscopies and laser ablation of endometriotic implants. Now at 18 weeks gestation with complex adnexal mass.
Adnexa - Complex mass
Adnexa - Complex mass
Endometrioma - 2 months later
Endometriosis

- 25 yo G0 with pelvic pain
Right endometrioma
Endometrioma layering
Bilat endometriomas laparoscopy
Ruptured endometrioma
Adnexa

- 35 yo G3P3 s/p BTL with enlarged ovary palpated on bimanual exam. Denies pain.
Adnexa - Sagittal
Adnexa - Coronal
Adnexal mass

- 37 yo G4P4 with pelvic pain
Dermoid vs endometrioma
Dermoid right ovary
ERROR: stackunderflow
OFFENDING COMMAND: ~
ERROR: stackunderflow