How to Manage Ovarian Cyst

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Objectives

After participating in this conference, you should have an increased knowledge of, and be more competent to:

• Identify the different types of ovarian cyst
• Identify the cysts that are cause for concern
• Recall the physiology and pathophysiology of cyst formation
Presenter Disclosure

• No Conflict of Interest to disclose

• No Financial or Scientific disclosures

• No Off-Label disclosures
Ovarian Cyst

- 20% women will have a pelvic mass
- 5-10% lifetime risk of surgery to evaluate a pelvic mass
- 13-21% will be malignant
- When can you watch?
- When must you operate?
Follicular Development

• Menstrual cycle ends...
• Recruitment
• Follicle stimulating hormone (FSH) rises
• Dominant Follicle is selected
• Critical level of estradiol is achieved.
• Luteinizing hormone (LH) surges
• Ovulation
Case #1

• 23 year nulliparous patient is sent to you by her Primary care physician (PCP). She had a little right lower quadrant pain. An ultrasound was ordered.

• She was called by the PCP and told she needed to see her Gyn right away, she has an ovarian cyst.
Ovum is surrounded by cumulus oophorus within the mature follicle
Pre-Ovulatory Study

Dominant follicle, trilayered endometrium
Follicle or Cyst?

Society of Radiologist Consensus Statement

– Patient’s age
– Last menstrual cycle
– Relevant signs and symptoms
– Hormonal status (fertility drugs, birth control, ERT, HRT)
– Personal or family history of cancer
– Pelvic surgery

» Radiology Vol. 256: No. 3 September 2010
Follicle or Cyst

• Dominant follicle ranges 1.7-2.8 cm
• Any follicle 3.0 cm is normal.
• Follicle
Simple Ovarian Cyst
Reproductive Age

- Round, smooth thin walls, no solid component, no septations
- >3 cm and ≤ 5cm
  - No need for follow up
- >5 cm and ≤ 7cm
  - Follow up in one year
- >7cm further imaging with MRI or surgical evaluation
Management of Follicles

• Follicles will resolve and no follow up is required.

• Polycystic Ovary/Metabolic Syndrome
  – Lifestyle modification
  – Metformin?
  – Clomid
  – BCP
  – Spironolactone
Management of Simple Cyst

• Conservative Measures

• Birth Control
  – Prevention
  – Cochrane 2011
    • 686 women
    • Combined OCP did not hasten resolution

• Surgery
  – If pain
  – If greater than 10cm?
Simple Ovarian Cyst
Postmenopausal Women

- ≤ 1.0 cm clinically of no consequence
  - Some extend to 3.0 cm
- 1 > and ≤ 7 cm follow up in one year, and/or until stability.
- >7 cm MRI or surgery
Expectant Management

• Postmenopausal women
  – Unilocular, simple cyst
  – Incidence 3-17%
• 226 postmenopausal women with ≤ 5.0cm simple cyst
• 54 increased in size and 6 had elevated CA-125

Nardo, ObGyn Vol. 102 September 2003
Expectant Management

- 2 of the 6 had cancer (CA-125 = 69 and 82)
- 84 of the remaining 172 (48.8%) no change in size, chose surgery.
- No cancers found.
- 2 of the 226 had cancer 0.88%

Expectant Management

• 2,769 postmenopausal women- simple cyst ≤ 10cm
• Serial U/S at 6 months intervals
• Spontaneous resolution in more than 66%
• No cancer at 6.3 years
• Simple cyst up to 10cm in diameter are almost always benign and may be safely followed without intervention.
  • ACOG Practice Bulletin No. 83
Case 2

- 27 year old with acute onset of pelvic pain following sexually intercourse.
- Last cycle was 25 days ago
- Cycles are regular
- Trying to conceive.
- Abdomen is tender, but not acute
Hemorrhagic Ovarian Cyst

Complex Fluid

Tennis Racquet Layered mass
Hemorrhagic Ovarian Cyst

• Physiology
  – Ruptured corpus luteum
  – Greatest blood per unit mass in the body

• Description
  – Complex cystic mass with reticular pattern
  – May have “solid component”
Hemorrhagic Ovarian Cyst

• Management in Asymptomatic Women
  – Resolution in 8 weeks
    • <3 cm. requires no comment
    • >3 ≤ 5 cm. requires no follow up
    • >5 cm follow up in 6-12 weeks

• Symptomatic
  – Admit for serial exams and Blood counts
  – OR
Case 3

- 33 year old Gravida 2 Para 2
- Cyclic pelvic pain
- Premenstrual spotting
- Palpable firm mass in the right adnexa
Endometrioma

Ultrasound Description

- Homogenous
- Low level echoes
- Sensitivity 83%
- Specificity 89%
Endometrioma

• Pathophysiology
  – Retrograde menstruation
  – Ovulatory Stigmata
  – Blood in the cortex
  – 17-44% women with endometriosis
Malignant Transformation of Endometriomas

• 1% undergo malignant transformation
  – Age > 45 years
  – < 6cm uncommon
  – > 9cm more likely
  – Rapid cyst growth or solid appearance
  – Latency period 4.5 years
The Treatment of Endometrioma

• GnRH agonist
  – May be effective

• Surgical Options
  – Drainage
  – Sclerotherapy
  – Cystectomy
  – Oopherectomy
Case 4

• 17 Year old had a episode of left lower quadrant pain.
• Now asymptomatic
• Palpable solid mass in the left adnexa
• No family history for cancer
Dermoid/ Mature Teratoma

- Layered Fat
- Distal shadowing
- Dermoid
- Uterus
- Rectum
Dermoid/ Mature Teratoma

Physiology
• Germ cell family
  – Ectoderm, mesoderm, endoderm
• 10-25% of all ovarian neoplasms
• 10% bilateral
• In utero growth

• Appear to result from arrest of oocyte
  – 46, XX
• 91% age 15-50
• 15% undergo Torsion
• Cystectomy
  – No recurrence
• Oophorectomy
Dermoid/ Mature Teratoma

Follow up and concerns

• Follow up 6-12 months
  – Ensure no changes

• Malignant transformation
  – 0.17-2.0%
  – Age > 50
  – Tumor > 10 cm.
  – Solid area with flow
  – Central flow
The “Thin” Septum and “Small” Calcification

• < 3.0 mm septum, with a small calcification
  – Reproductive age
    • Follow up in 6-12 weeks
    • Resolution-confirms a hemorrhagic cyst
    • Persistence
      – MRI or Ultrasound-endometrioma confirmed
      – Continued follow up
      – Uncertain diagnosis-surgical evaluation
  – Postmenopausal
    • Surgical evaluation
17 Year Old
64 Year Old
Thick Septum and Solid Elements

- Septum > 3.0 mm
- Focal wall thickening > 3.0mm
- Cyst with a nodule with internal blood flow
- Requires surgical evaluation
Persistence and Resolution of Ovarian Abnormalities

- University of Kentucky
  - 1987-2012
  - 39,337 women
    - Asymptomatic women 50 ≥
    - Asymptomatic women 25 ≥ and ≤50
      - Family history of ovarian cancer in first degree relative
    - Abnormality
      - Ovarian volume > 2 SD above the norm
      - Septations, solid area, or papillary projections
Persistence and Resolution of Ovarian Abnormalities

- Classified as:
  - Normal ovaries
  - Simple or unilocular cyst
  - Septations
  - Solid focal areas
  - Solid

- Repeat Ultrasounds were at intervals ranging from 6 weeks or 6 months
  - Resolution
    - Yearly follow up
  - Increase in size or change
    - Surgery
Persistence and Resolution of Ovarian Abnormalities

- 46.7% abnormal initial scan
- Complex abnormalities (Cyst with solid areas and solid masses)
  - MORE likely to resolve in a year 76.5-80.6%
  - Median time to resolution 7.8-8.7 weeks
- Unilocular Cyst/Cyst with Septatations
  - Resolution 32.8-43.9%
  - Median time to resolution 53-55.6 weeks
Outcomes from US follow up of small complex adnexal masses in women over 50


- Cohort enrolled 2007-2011
  - Women 50 yrs or greater
  - 1-6cm complex mass
- Excluded:
  - metastatic disease on imaging
  - Ca 125 >35
- Goal
  - The risk associated with observation
  - Duration of observation
Outcomes from US follow up of small complex adnexal masses in women over 50


• Results

  – 1,363 women were identified
    • 204(15%) surgical removal WITHOUT follow up US
    • 18(1.3%) ovarian cancer or borderline tumor
  – 994(73%) had 1 or more follow up US
    • 218 (22%) had surgery
    • 6 Borderline cancers
    • 5 Epithelial cancers
    • 1 Granulosa cell
Outcomes from US follow up of small complex adnexal masses in women over 50


• Results
  – Of the 12 women that had follow up scans and had a cancer:
    • First repeat scan was 2 to 7 months
    • All 5 epithelial cancers increased in size
  • 422(31%) of the 1,363 had surgery
  • 96% had benign disease
Outcomes from US follow up of small complex adnexal masses in women over 50


- The risk of malignancy in this group was 1.3%
- No benefit has been demonstrated with long term follow up.
- Stability over time suggest against malignancy
- Benign lesions are not precursors to malignancy
- Continued monitoring leads to risk
- Monitoring stable masses beyond 7 months for the purpose of excluding malignancy is of limited value
Ultrasound follow up of an adnexal mass has the potential to save lives

Am. J. Obstet. And Gynecol. Nov. 2015, Ormsby et al,

• Monitoring stable masses beyond 7 months for the purpose of excluding malignancy is of limited value

– Our review of the literature shows otherwise
Ultrasound follow up of an adnexal mass has the potential to save lives

*Am. J. Obstet. And Gynecol.* Nov. 2015, Ormsby et al,

- 30 articles reviewed
  - Ovarian mass that had been found on US evaluated for the risk of malignancy
  - Malignancy HAS BEEN found in apparently stable masses in up to 3 years after initial detection.
  - Neoplasia go through stepwise progression
    - Cystadenoma-Borderline-Invasive cancer
Ultrasound follow up of an adnexal mass has the potential to save lives

*Am. J. Obstet. And Gynecol.* Nov. 2015, Ormsby et al,

- Failure to follow masses may lead to anxiety in some women and overconfidence in others.
- *Limiting US follow up beyond 7 months in women with adnexal abnormalities is not based on solid findings and should not be taken as the basis for universal recommendations,*
Potential harms outweigh benefits of indefinite monitoring of stable adnexal masses


- Malignancy HAS BEEN found in apparently stable masses in up to 3 years after initial detection.
- Only 3 cancers were diagnosed > 1 year from the initial detection
- All 3 cases were simple cyst
- None progressed
- Appear unrelated to the cancer

- **Autopsy Study**
  - 56% of post-menopausal women have benign solid or cystic lesions.

- **Pathways to cancer**
  - Epithelial cancers arise from the fallopian tube
  - Helps explain the failure of US screening
  - Borderline to malignancy is slow, and some consider these lesions benign.
The effect of Bipolar during Ovarian Cystectomy on Ovarian Reserve


- 266 women were treated with bipolar
- 279 with hemostatic suture
- AMH levels were higher at 1 & 3 months in the suture group
- FSH levels were higher at 1 month in the bipolar group
- Observed pregnancy rates did not differ
How Many Cancers?

• 472 women chose surgery
  – 85 cancers (18 %)
• 53 Epithelial ovarian cancers (11.2%)
• 17 Low Malignant Potential (3.6%)
• 10 Metastatic to the Ovary (2.1%)
• 5 Non epithelial ovarian cancer (1.2%)

• Pavlik et al Frequency of Ovarian Abn. *OBGYN, August 2013*
Referral to Gynecologic Oncology

**Premenopausal (<50 years)**
- Ca 125 greater than 200
- Ascites
- Evidence of abdominal or distant metastasis
- First degree family of breast or ovarian cancer

**Postmenopausal (> 50)**
- Elevated Ca 125
- Ascites
- Nodular or fixed mass
- Evidence of abdominal or distant metastasis
- First degree family of breast or ovarian cancer

- ACOG Practice Bulletin, reaffirmed 2013
Ova 1®

• Approved in 2009
  • Ca 125
  • Transthyretin
  • Transferin
  • B-microgloblin
  • Apolipoprotein A1

• 516 women Ova 1® and pelvic exam
  – 96% sensitivity
  – 35% specificity

Reference
• Premenopausal
  > =5.0
• Postmenopausal
  >=4.4
Conclusion

- History
- Family History
- Duration
- Symptoms
- Findings
- Risk