

Acute Pelvic Pain

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Preview

- Gynecologic causes of acute pelvic pain: emphasis on diagnosis and what's new
- Adnexal Torsion
- Ruptured Ovarian Cyst
- PID
- Tubo-ovarian abscess (TOA)
- Myomas
- Endometriosis



The Case of Ms. A

- Ms. A is a healthy, 41 year old Arabic-speaking woman, G3P3, who presented to the ER with LLQ pain.
- She was not pregnant. She also had a low grade fever and intermittent nausea and vomiting. The pain was sudden in onset and at times radiated down her left leg. It was worse when it first started and subsequently waxed and waned but was still 7 out of 10 when we saw her. It was worse with movement. She has never had pain like this before.
- She had one sexual partner (her husband), no history of STD's and used OCP's for irregular bleeding. She was on day 3 of her pill pack. Except for the N/V, she had no other GI symptoms. She also reported no vaginal discharge, no dysuria and ROS was negative.

Acute Pelvic Pain

~~Pregnant~~

- ~~ECTOPIC~~
- ~~ECTOPIC~~
- ~~ECTOPIC~~
- ~~Abortion~~
- ~~Ruptured Corpus Luteum Cyst~~
- ~~Degenerating Fibroid~~
- ~~Everything else on the non-pregnant list~~

Not pregnant- Gyn

- Ruptured ovarian cyst
- Adnexal Torsion
- Endometriosis
- PID, TOA
- CPP- exacerbation
- Dysmenorrhea
- Mittelschmerz
- Degenerating or twisted myoma
- Ovarian hyperstimulation syndrome
- Hematometra

Not pregnant- GI/GU

- GU: stones, cystitis, pyelonephritis
- GI: appendicitis, diverticulitis, SBO, volvulus, IBD, gastroenteritis, constipation,, incarcerated hernia, bleeding peptic ulcer, ischemic bowel
- Musculoskeletal—muscle strain/injury, herniated disc, arthritis
- Other: abdominal aneurysm; abdominal angina; porphyria, sickle cell crisis, abdominal migraine

Physical Exam

- T=38.3. Other VS Normal
- Mod distress but stoic, difficulty changing positions in bed, pain worse when lying flat.
- Abd: Soft, ND, +BS. Localized rebound in LLQ. Large firm mass in lower pelvis, tender. Negative bed shake. Positive left leg raise and left obturator sign.
- Pelvic: Speculum-no mucopus, nl cervix etc. BME: Difficult b/c of pt discomfort but approx 16 wk mass-likely uterus, mod tender. Cervical motion tenderness in both directions. Left adnexal tenderness, unable to palpate adnexa b/c of pain.
- Rectal: Confirms above.

Question #1

In a patient presenting with acute abdomino-pelvic pain, ultrasound will provide a definitive diagnosis for which of the following (mark all that apply):

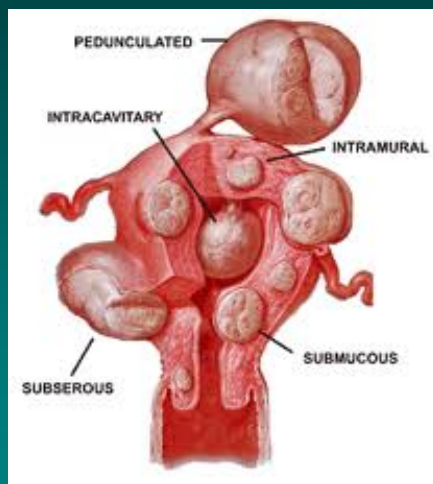
1. PID
2. TOA (tubo-ovarian abscess)
3. Ruptured ovarian cyst
4. Endometriosis
5. Adnexal torsion
6. Degenerating myoma



Could it be a fibroid?

- Fibroids rarely cause acute or severe pain.
- Acute pain → only if degenerating, twisting on a pedicle or prolapsing through the cervix
- Torsion of fibroid → presentation identical to adnexal torsion but u/s shows solid mass
- Prolapsing fibroid → Waves of crampy abdominal pain accompanied by bleeding. Once prolapsed → no pain. Easily diagnosed on speculum exam.

Pedunculated fibroids can twist



- Presentation very similar to ovarian torsion: sudden onset severe pelvic pain, perhaps intermittent, assoc N/V, localized or generalized tenderness
- Relatively rare

Degenerating myoma

- Rare
- Occurs in very large myomas (>10cm) and more commonly in pregnancy
- Onset gradual, not acute
- Physical exam: localized tenderness over the myoma, tender uterus, possibly CMT. Typically no peritoneal signs. Can have low grade fever, sl incr WBC.
- U/S—will show presence of large fibroid. Less reliable for diagnosis of degeneration but might see cystic changes suggestive of degeneration



Large degenerating fibroid

Transabdominal ultrasound of the uterus shows the very heterogeneous appearance of a degenerating fibroid (arrows), which contains irregular hypoechoic components.

Imaging of Acute Pelvic Pain. VANDERMEER, Clinical Obstetrics & Gynecology. 52(1):2-20, March 2009.

Back to pt: Labs/Studies

- Labs: WBC initially 11.4 with 6.4 PMN's, later in day: 16.2 with 14 poly's. HCT init 37, down to 32.5. Plts 533. Lytes, LFT's, amylase all normal. ESR=18.

Studies:

- Abd Series: Negative
- Ultrasound: Limited b/c of large fibroid uterus (17 x 10 x 11). Small amt of free fluid. Right ovary nl. Left ovary enlarged at 5.2 cm. Differential per radiology=torsion, TOA, ectopic.
- Further work-up: Surgery consulted--felt not diverticulitis.

Puako: spotted 24 turtles!



- Puako: 2 miles down highway to the right
- Turn left at T in Puako
- Many places to get to shore
- We saw these opposite #101

Question #2

A sexually active woman presents with gradual onset of worsening pelvic pain. In addition to pelvic organ tenderness on exam, which of the following findings must be present to make the diagnosis of PID prior to treating it?

1. Fever >38.0
2. CMT (cervical motion tenderness)
3. Cervical muco-pus
4. Increased white cell count
5. Ultrasound showing pyosalpinx
6. Absence of a competing diagnosis



Could it be PID?

LIFE
LOVE
LAUGHTER
they're all infectious...
...and so is chlamydia.

- **Onset/location**: Subacute (1-2 days) onset of dull bilateral and central pelvic pain
- **Progression/Assoc sx**: Pain gradually worsens and can be severe. Feel ill. "PID shuffle". Possible fever, vag discharge, diarrhea, N/V. Worse with movement and lying flat.
- **Risk Factors**: Age < 25 (rare after age 35-40). Multiple or new partners, unprotected sex, h/o STD. New IUD (<2 mos). Douching.
- **PROTECTIVE**: OCP's, pregnancy, condoms, tubal ligation, possibly levonorgestrel IUD (Mirena)

PID-etiology

- PID= ascending infection of upper genital tract: salpingitis, peritonitis, endometritis, TOA (tubo-ovarian abscess)
- Etiology: polymicrobial (GC, CT, mycoplasma, gardnerella, prevotella, Ecoli, Hflu, peptostrepto, other anaerobic/aerobic vaginal flora). Similar to flora seen with BV.
- 2/3 have concomitant BV

PID



- PE: abdominal tenderness, adnexal tenderness, CMT (or simply: pelvic organ tenderness).
 - Minimum criteria per CDC is lower abdominal or pelvic pain plus abdominal or pelvic organ tenderness on exam without competing diagnosis.
 - Additional evidence (improves specificity): Inc WBC, fever, Inc ESR, mucopus from cervix, EMB showing infection, positive cervical cultures.
- **DIAGNOSIS OF EXCLUSION!** r/o appy, UTI etc

Role of Mycoplasma Genitalium

- Controversy: unclear if pathogen or bystander
- Very difficult to culture, PCR shows MG in ~15% with PID
- Most studies cross-sectional . Need more longitudinal studies to establish causality
 - 2 cohort studies show 8-13 fold increase PID in women with MG. Largest cohort study showed no association.
- Unclear if assoc with long term sequelae. Implicated in tubal factor infertility in one study
- Has been associated with treatment failure. Some strains resistant to tetracyclines (azithro ok)

PID Clinical Pearls

- Range of severity from asymptomatic to sepsis.
- Best to over-treat to avoid long-term sequelae of chronic pelvic pain, infertility, ectopic.
 - In PEACH trial, in treated women, infertility=17%, recurrent PID=14%, CPP=37%
 - Infertility increased with delay in treatment (>3days from sx), severity of illness, number episodes PID.
- Repeat pelvic exam in 2-3 days(to ensure improving)
- Negative GC and CT culture does not rule out PID—continue full course Abx
- **TREAT PARTNER**, check for other STI's

2010 PID treatment: CDC

- Outpatient: Ceftriaxone 250mg IM + Doxy 100 mg/bid for 14 days +- **Flagyl 500 mg bid for 14 days**
- Inpatient: Cefotetan (q12) or Cefoxetin (q6) 2g IV + Doxy 100 mg po bid for 14 days OR Gent + Clinda (900 mg q8)
 - 24 hours after improvement, can switch to Doxy only to complete 14 days unless TOA present, then use Clinda or Flagyl + Doxy

What's new 2010 CDC for PID

- Quinolone resistant GC: quinolones no longer recommended, if cephalosporin not feasible: use levoflox +- flagyl if community prevalence low but get culture first to check susceptibility.
- Greater emphasis on adding metronidazole to all regimens to cover anaerobes
- Insuff evid to warrant removal of IUD ie treat through the PID
- Possible association of PID with Mycoplasma Genitalium (azithro better than doxy for this)

2013: no cefixime for GC

Recommend Tweet Share

Update to CDC's *Sexually Transmitted Diseases Treatment Guidelines, 2010*: Oral Cephalosporins No Longer a Recommended Treatment for Gonococcal Infections

Weekly

August 10, 2012 / 61(31);590-594

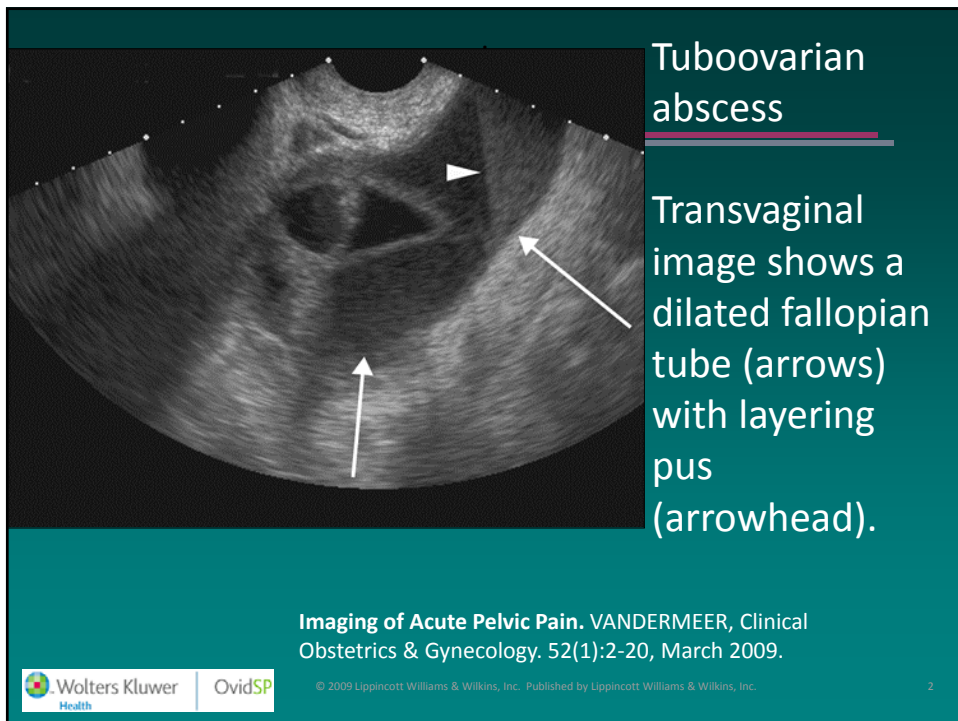
Gonorrhea is a major cause of serious reproductive complications in women and can facilitate human immunodeficiency virus (HIV) transmission (1). Effective treatment is a cornerstone of U.S. gonorrhea control efforts, but treatment of gonorrhea has been complicated by the ability of *Neisseria gonorrhoeae* to develop antimicrobial resistance. This report, using data from CDC's Gonococcal Isolate Surveillance Project (GISP), describes laboratory evidence of declining cefixime susceptibility among urethral *N. gonorrhoeae* isolates collected in the United States during 2006–2011 and updates CDC's current recommendations for treatment of gonorrhea (2). Based on GISP data, CDC recommends combination therapy with ceftriaxone 250 mg intramuscularly and either azithromycin 1 g orally as a single dose or doxycycline 100 mg orally twice daily for 7 days as the most reliably effective treatment for uncomplicated gonorrhea. CDC no longer recommends cefixime at any dose as a first-line regimen for treatment of gonococcal infections. If cefixime is used as an alternative agent, then

Q2: A sexually active woman presents with gradual onset of worsening pelvic pain. In addition to pelvic organ tenderness on exam, which of the following findings must be present to make the diagnosis of PID prior to treating it?

1. Fever (increases specificity but not necessary for diagnosis)
2. CMT (CMT is a subset of pelvic organ tenderness)
3. Cervical muco-pus (increases specificity)
4. Increased white cell count (increases specificity)
5. Ultrasound showing pyosalpinx (u/s not necessary unless worry for TOA)
6. Absence of a competing diagnosis *****

Tubo-ovarian abscess

- No clear risk factors in those with PID
- Diagnosis via ultrasound or CT. Suspect when not improving after 2 days of abx (80% of trtment failures due to TOA)
- Tubo-ovarian complex (TOC): radiologic diagnosis. Ovary can still be seen separate from tubal mass. Unclear if should receive IV antibiotics (given lack of evidence, low threshold to admit)



TOA: Treatment Evolving

- Historically, treated surgically.
- In 90's, trial of IV Abx. Surgery only if not improved within 3 days. Abx alone: 75% effective
- Now, IR-guided (U/S or CT) aspiration or catheter placement has become accepted part of treatment (in conjunction with ABX).

TOA: Drainage

- Biggest questions are timing (antibiotic trial and drainage only if fails) and whether to do in all or a subset (eg only if >5cm). Insufficient evidence to answer these.
- Largest study of aspiration (n=302): 1/3 needed more than one aspiration, 7% eventually needed surgery
- A smaller study of transgluteal CT-guided catheter placement also with high success rate but more painful procedure

TOA: Treatment

- Admit: broad spectrum IV abx with anaerobic coverage
- For small (<5cm) abscesses and for TOC, IV antibiotics without drainage often sufficient
- Draining larger abscesses (>5cm) may speed recovery and decrease hospitalization
- How long to continue IV Abx? Older studies→7 days. CDC: at least 1 additional day after clinical improvement.
- Oral antibiotics to complete 14 days: doxy plus flagyl or clinda (to ensure anaerobic coverage)
- In older women, repeat U/S after resolution to r/o malignancy

Blue Dragon Restaurant: Kawaihae



Live music
every night
Dancing on
weekends



Back to Pt: Follow-up

- Given unclear diagnosis, Ms A was admitted for observation. Not taken directly to OR b/c no further children desired.
- Over the course of the evening/night, she became febrile and was started on antibiotics for presumed PID vs diverticulitis.
- Given difficulty imaging ovary on ultrasound, and unclear diagnosis, an MRI was obtained which confirmed large myomatous uterus and showed non-specific enlargement of left ovary, 9x5x6. No evidence of malignancy. No diverticulitis.

Could it be torsion?



- Onset and progression: Acute onset of severe pain. “Stabbing” in 70%. Can be preceded by exercise, sex, BM. Classically intermittent though not always. Often can elicit a history of similar though less severe pain prior to presentation. Can radiate to back, flank, groin (50%)
- Assoc Sx: Very often assoc with N/V (70%) and sweating. Sometimes low grade fever.

Torsion: Physical exam

- PE: Usually writhing in pain. (They look BAD). Exam often not that revealing. Usually have direct tenderness but do not typically have peritoneal signs (unless long standing necrosis). CMT usu unilateral. Tender adnexal mass on exam though exam often limited by pain. Minority will have fever
- Labs: Mod inc WBC (in minority). WBC not associated with severity of torsion.

Pathophysiology

- Elongated utero-ovarian ligament (more common in kids) and/or increase in weight of ovary or tube due to cyst, mass or swelling*
- Adnexa twists on its vascular pedicle
- As venous flow is impeded, ovary swells, further impeding vascular flow
- Result is ischemia and eventually necrosis

*Only 10% occur in normal sized ovaries (up to 50% in kids)—and these are at higher risk of recurrence

Adnexal torsion: Risk Factors

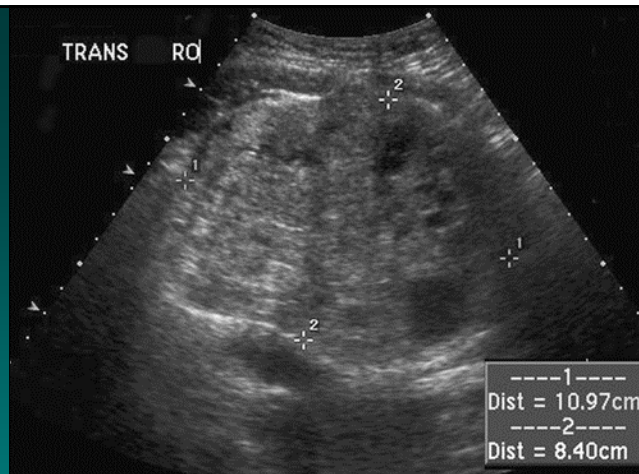
- Most common cysts to twist: dermoid (mature teratoma) > serous cysts > hemorrhagic cysts
- Size threshold: unknown—majority in cysts ≥ 5 cm. Even very large cysts (20 cm) can twist
- Location: Right (2/3) > >left
- Age: Reproductive aged women >> post-menopausal

Adnexal torsion: Risk Factors (cont'd)

- More common in:
 - ovarian hyperstimulation syndrome (8% risk)
 - pregnancy
- Less common in masses associated with (adhesions prevent twisting):
 - cancer
 - endometrioma
 - tubo-ovarian abscess
- Tubal torsion (rare): increased risk after tubal ligation

Role of Imaging

- Primary goal: determine if ovary is enlarged given torsion is rare with normal sized ovary
- Ultrasound preferred but CT can reveal presence of mass
- Doppler ultrasound can demonstrate presence or absence of blood flow. **However, presence of flow does not rule out torsion and absence does not rule it in.**
- **Torsion therefore remains a clinical diagnosis and surgery is only way to confirm**



Ovarian torsion in a patient with acute pelvic pain 2 weeks postpartum. Sonography showed a markedly enlarged right ovary with no flow on color Doppler (not shown).

Ultrasound to diagnose torsion

- Studies small, most retrospective
- Skill, experience required (ie sensitivity and specificity in practice less than in research studies)
- Study of 199 women with acute pelvic pain:

Finding	Sensitivity	Specificity
Tissue edema	21%	100%
Absent intra-ovarian vascularity	52%	91%
Absent arterial flow	76%	99%
Absent venous flow	100%	97%

- Other studies report sensitivity 43%, specificity 92% for absent venous flow

Nizar, J Clin US 2009



Torsion treatment

- Historically, oophorectomy universally recommended due to fear of embolism. This not borne out by literature
- Remove cyst if present
- If no cyst present, consider fixing ovary (oophoropexy) to prevent recurrence
- Usually able to do via laparoscopy

Oophorectomy or not?

- Typically, ovary untwisted at time of surgery and observed to determine if viable but visual determination is unreliable
- Recent small cohort studies have found that ovarian function is preserved in 88-100% with simple untwisting even if ovary appears dusky (determined via u/s studies of follicles)
- Case reports of subsequent necrosis, sepsis so only offer to women desiring future reproduction

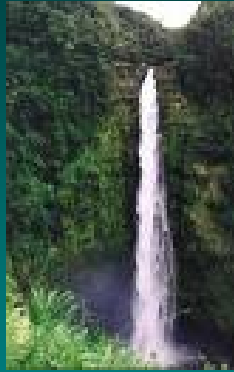
How long before the ovary dies?

- Unknown
- Depends on degree of ischemia
- One study in children found median time from onset of pain of 14 hours in those with viable ovary vs 27 hrs with non-viable ovary



Early diagnosis critical to save ovarian function. Call gyn early (even before ultrasound if high suspicion)

Great Road Trip: Akaka Falls



On the way to Hilo. Incredibly lush.
Quintessential Hawaii

Could it be a ruptured cyst?

- Presentation varies from asymptomatic (usu for follicular cyst rupture) to extremely painful and/or hemodynamically unstable
- Onset: **Sudden**, mod to severe pain. Often preceded by sex, exercise or BM. Typically starts on one side and becomes generalized lower pelvic pain.
- Assoc Sx: Often N/V at onset which subsides. Possible low grade fever or dizziness. Worse with movement and lying flat.
- Progression: Pain usually begins to recede within hours but can take as long as a day. Symptoms due to blood in abdomen (eg bloating, constipation), can take 2 weeks to subside.

Ruptured ovarian cyst



- Common!
- Corpus luteum cyst > follicular cyst
>>> dermoid, endometrioma, TOA
- Usually occurs in luteal phase. Period often late or accompanied by mid-cycle spotting.
- Pain due to either blood from rupture site accumulating within ovary and stretching capsule or irritation of peritoneum by blood.
- Much higher risk if anticoagulated or bleeding disorder (von-wd). Slightly decreased risk on OCP's

Diagnosis and treatment

- Diagnosis: DIAGNOSIS OF EXCLUSION. U/S often not helpful: cyst may or may not be present, free fluid may or may not be increased. Gold standard is laparoscopy (seldom used).
- Treatment:
 - Usually outpatient. Ensure stable HCT. Pain meds. Close follow-up to ensure improving.
 - Admit for observation if pain severe or unsure of diagnosis
 - Laparoscopy: if hemodynamically unstable, worried about torsion or not improved within 24 hrs.

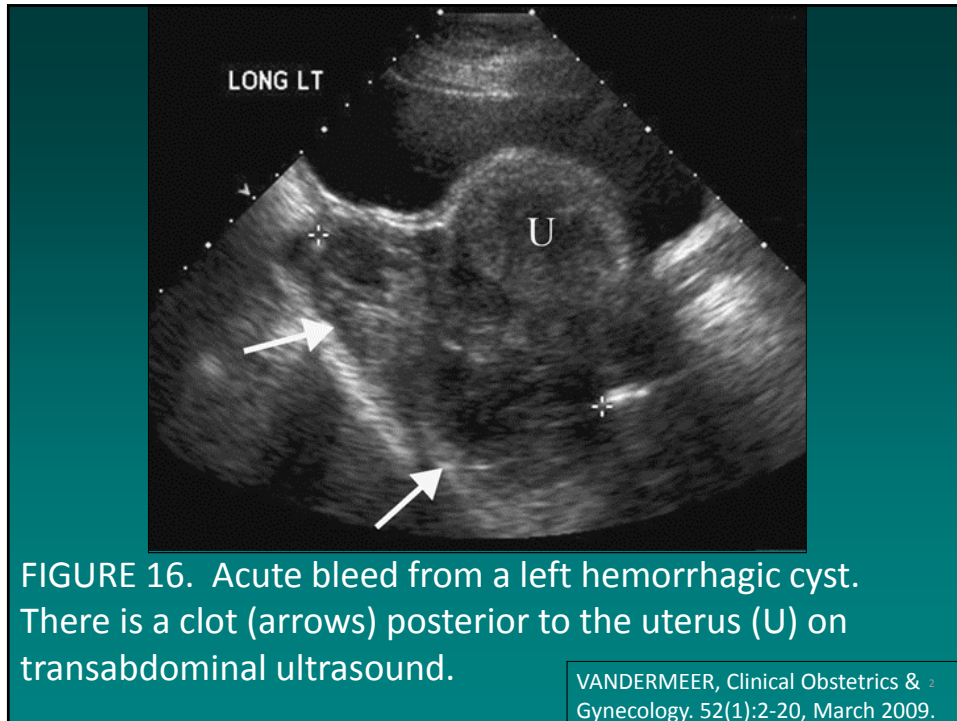


FIGURE 16. Acute bleed from a left hemorrhagic cyst. There is a clot (arrows) posterior to the uterus (U) on transabdominal ultrasound.

VANDERMEER, Clinical Obstetrics & Gynecology. 52(1):2-20, March 2009.

Prevention of recurrence?

- High dose (50mcg) pills known to suppress follicular cysts but risks do not justify use for this
- Modern, lower dose pills: evidence is mixed and benefit is modest (25% decrease) at best. (About 30% of cycles are ovulatory on OCP)



Prevention of recurrence?

- Implanon—higher rate of cysts than control (copper-T); Mirena levonorgestrel IUD higher rate of cysts than control (hysterectomy)
- Depoprovera: unlike other methods, known to suppress ovulation reliably so will decrease hemorrhagic cysts. Lupron (GnRH agonist) also effective but more side effects

Women on anti-coagulation?

- In women being anti-coagulated, ovarian cyst rupture can be associated with life-threatening hemoperitoneum
- Recommend depo-provera or Lupron to all anti-coagulated repro-aged women to prevent
- Depo-provera can be given sub-q if concern for hematoma with intra-muscular injection

Could it be endometriosis?

- May cause acute pelvic pain either at time of period (acute dysmenorrhea) or due to endometrioma cyst rupture.
- History of prior dysmenorrhea, dyspareunia or pelvic pain
- Rupture of endometrioma is uncommon but would present similarly to ovarian cyst rupture

Q1: In a patient presenting with acute abdomino-pelvic pain, ultrasound will provide a definitive diagnosis for ...? (mark all that apply):

1. PID (can be useful to r/o competing diagnoses)

2. TOA (tubo-ovarian abscess) *****

3. Ruptured ovarian cyst (even if it shows a cyst or increased free fluid, diagnosis is clinical)

4. Endometriosis (only useful if endometrioma present)

5. Adnexal torsion (use is to rule in an adnexal mass, presence/absence of flow not diagnostic)

6. Torsion of a pedunculated myoma (use is to rule in a myoma, twisting will not be visible)

7. Degeneration of a myoma (use is to rule in a myoma, may or may not show signs of degeneration)

Case Summary

- Given lack of improvement on antibiotics and possibility of torsion, plan made to go to OR. Given symptomatic fibroids, patient desired hysterectomy at same time if possible.
- Op findings: large fibroid uterus, ruptured left ovarian cyst with large clot adherent to ovary but no active bleeding. Not twisted at time of surgery but path reported evidence of torsion. No evidence of degenerating myoma.



Conclusions: Acute Pelvic Pain

- Ovarian torsion: Diagnosis of exclusion (U/S not diagnostic) and delay leads to ovarian death so refer to gyn or go to surgery earlier rather than later. Leaving ovary in-situ is becoming an acceptable option though studies are still small
- Ovarian Cyst Rupture: Diagnosis of exclusion (U/S not diagnostic). Ensure hemodynamically stable. OCP's not effective to prevent recurrence.

Conclusions: Acute Pelvic Pain

- PID: Diagnosis of exclusion. Overtreatment acceptable to prevent sequelae. Avoid fluoroquinolones due to resistant gonorrhea. Ok to keep IUD in place
- TOA: Diagnosis via ultrasound. Admission and IV abx required +/- IR guided drainage



Questions?

