Acute Pelvic Pain and Gynecologic Emergencies

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Case Study

- Ms R is a 27 year old woman seen with worsening unilateral pelvic pain over the past 24 hours
- She is 7 weeks from her last menstrual period and has used contraception inconsistently
- On PE, she has ¾ RLQ tenderness with mild rebound tenderness on the same side
- Bimanual exam reveals a right-sided 4-5 cm tender, cystic mass and a 7 week size uterus

Case Study

Her clinical presentation is most consistent with

1. Ruptured ectopic pregnancy
2. Adnexal torsion
3. Ovarian hemorrhage
4. Ovarian rupture
5. All of the above

Ob-Gyn For Dummies

Until proven otherwise

- All vaginal bleeding is due to pregnancy
- All pelvic pain is due to ectopic pregnancy

Most diagnoses can be made with

- History and physical exam
- b-hCG testing
- Pelvic (vaginal probe) ultrasound

Differential Dx: Acute Pelvic Pain

Gynecologic Origin

- Infection
  - Acute salpingitis (PID)
  - Tubo-ovarian abcess (TOA)
- Complications of Pregnancy
  - Ectopic pregnancy
  - Septic abortion
  - Post-partum or post-abortion endometritis
  - Post-medical abortion sepsis

Differential Dx: Acute Pelvic Pain

Gynecologic Origin

- Adnexal Accidents
  - Ovarian torsion
  - Ovarian rupture
  - Ovarian hemorrhage
- Other Gynecologic Problems
  - Flare of symptoms from endometriosis
  - Ovulation (mittelschmerz)

Differential Dx: Acute Pelvic Pain

Non-Gynecologic Origin

- Gastrointestinal
  - Appendicitis or appendiceal abcess
  - Inflammatory bowel disease
- Urinary Tract
  - Acute cystitis or pyelonephritis
  - Ureteral stone
- Orthopedic
  - Lumbo-sacral muscle spasm
  - Lumbar disc disease

Adnexal Torsion (AT)

- 80% of AT cases in reproductive aged women
  - 10% in postmenopausal women
  - 10% in premenarchal girls (often normal ovary)
- Predisposing factors
  - Mobile ovarian cyst; dermoid or functional cyst
  - Previous abdominal surgery
  - Pregnancy (14% of women with torsion)
  - Ovarian hyperstimulation (fertility drugs)
- More common on right side

Adnexal Torsion (AT)

- 3% of all gynecologic emergencies
- Due to twisting of ovarian mass on pedicles: utero-ovarian ligament and infundibulo-pelvic ligament
  - Involvement of tube or ovary; *usually both*
  - Edema develops when venous outflow blocked
  - Ischemia, hemorrhage develop as arterial inflow blocked

Adnexal Torsion (AT)

- **Presentation**
  - Recent physical activity, especially common during or after intercourse
  - Acute onset of unilateral pelvic ($\pm$ flank) pain
    - » Ipsilateral to AT in 75%
    - » If torsion is intermittent with spontaneous untwisting, symptoms may be recurrent

Adnexal Torsion (AT)

- Physical findings
  - 50% nausea, vomiting
  - 43% ▲WBC
  - 34% peritoneal signs
  - 20% fever
- Pain often intense initially, then improves with ischemia and loss of nerve transmission
- Exam: unilateral tender adnexal mass…may become palpable over time with increasing venous congestion

Adnexal Torsion

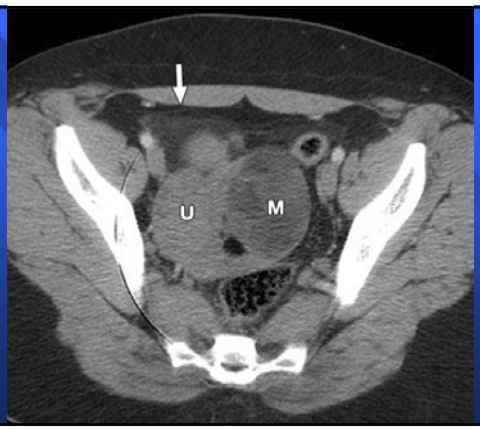
- **Evaluation**
  - Ultrasound shows unilateral ovarian cyst (avg = 9.5 cm) in 77%; solid mass in 23%
  - CT and MRI (usually done as *incidental* studies)
    - » 84% fallopian tube thickening
    - » 84% smooth wall thickening of the adnexal mass
    - » 64% ascites
    - » 36% uterine deviation toward affected side
  - Color Doppler US flow studies
    - » Reduced or absent vascular flow is suggestive of AT
    - » Diagnosis should not be based *solely* on this finding, as 45% of women with AT have normal flow

TABLE 1: Prevalence of CT Findings in Pathologically Proven Adnexal Torsion (n = 35)

CT Finding	No.	%
Adnexal enlargement (4–20 cm)	35/35	100
Smooth margins	35/35	100
Partially cystic mass	28/35	80
Mural thickening	14/28	50
Deviation of uterus to side of involved ovary	16/35	46
Misplacement of adnexa to contralateral side	11/35	31
Midline position of adnexa	11/35	31
Far anterior	3/11	27
Far posterior	5/11	45
Visualization of uninvolved ovary	26/35	74
Tubal thickening	6/35	17
Infiltration of pelvic fat	10/35	29
Pelvic ascites	14/35	40
Whirl sign	2/35	6

CT Features of Adnexal Torsion

Hiller N. et al, AJR 2007; 189:124



Adnexal Torsion

- **Management**
  - Minimize time from diagnosis to treatment order to improve likelihood of ovarian salvage
  - Diagnostic laparoscopy to confirm and treat
    - » Unwind complex (detorsion); PTE rate is 0.2%
    - » 58% are functional cysts; cystectomy not necessary
    - » Avoid oophorectomy, as black-blue appearance of adnexa is due to vascular stasis, *not* gangrene
  - After detorsion *alone*, ovarian function is maintained in 88-100% of cases
  - If functional cyst, avoid recurrence with OCs

Ovarian Hemorrhage

- Due to intracapsular or extracapsular hemorrhage
  - Usually spontaneous, but often activity-related
  - More frequent in pregnancy
- ***Intracapsular* hemorrhage**
  - Acute onset of severe *unilateral* abdominal pain
  - Exam shows unilateral cystic adnexal mass
  - Sonogram confirms, but may be difficult to differentiate from adnexal torsion
  - Pelvic ultrasound: no free fluid

Ovarian Hemorrhage

- ***Extracapsular hemorrhage***
  - Acute onset of *diffuse* lower abdominal pain
  - Exam shows diffuse pelvic tenderness, one side worse
  - Pelvic ultrasound
    - » Mixed attenuation adnexal mass
    - » Fluid with internal echogenicity surrounding uterus and adnexa
- **Management**
  - Suspect self-limited bleed: observation only, with serial hematocrits
  - Unclear diagnosis or severe bleed: treat at laparoscopy

Ovarian Rupture

- Acute rupture of ovarian cyst, with spillage of contents
  - Follicular fluid: transient pain; self-limited
  - Dermoid or endometrioma: chemical peritonitis
- Exam always shows diffuse pelvic pain; may not be able to detect cyst, since it has deflated
- Pelvic ultrasound: intraperitoneal fluid
- Culdocentesis positive for offending substance
- Treatment
  - Follicle fluid: expectant management
  - Endometrioma, dermoid; irrigate pelvis, resect cyst

What's First: CT or Ultrasound?

CT or MRI* preferred
- Ovarian torsion
- Peritonitis
  - Appendicitis
  - Diverticular disease
  - Tubo-ovarian abscess
- If pregnant + peritonitis, MRI only (no CT)

Ultrasound preferred
- Positive pregnancy test
- Ovarian hemorrhage
- Ovarian rupture
- Asymptomatic adnexal mass

CT/ MRI*: abdomen and pelvis

CT and MR Features of GYN Abnormalities in Women With Pelvic Pain

UTZ *unnecessary*
- Benign lesion
- Patient needs immediate surgery
- Variant of normal anatomy

UTZ *necessary*
- Uncharacteristic of a benign lesion
- Indeterminate risk for malignancy
- Suspicious characteristics of malignancy

Kalish GM, et al, Ultrasound Quarterly 2007;23: 167

Post Pregnancy Acute Pelvic Pain

- After delivery
  - Post-partum endometritis
- After abortion
  - Post abortal syndrome (PAS)
  - Physiologic uterine cramps
  - Undetected perforation
  - Ectopic pregnancy
  - Post-abortal endometritis
  - Post-medical abortion shock

Post-Partum Endometritis: Predisposing Factors

- Chorioamnionitis in labor
- Caesarean section
- Carriage of group B Strep
- Prolonged rupture of membranes
- Prolonged labor
- Multiple vaginal examinations in labor
- Intrapartum fetal monitoring
- Manual placental removal

Post-Partum Endometritis

- Incidence: 2-5% vaginal deliveries; 5-30% C/S
- Symptoms
  - Often starts <2-3 days post-partum; may be delayed up to two weeks
  - Abdominal pain, malaise, fever, sweats, chills, and purulent lochia
- Signs
  - Fever
  - Uterine tenderness
  - Adnexa usually non-tender

Post-Partum Endometritis

- If post-partum *fever*, endometritis is a diagnosis of exclusion
  - Catheter-drawn urinalysis (to exclude pyelonephritis)
  - Breast exam (to exclude mastitis or abscess)
  - Episiotomy or abdominal incision for wound infection
  - Extremity exam (to exclude thrombophlebitis)
- Management
  - Probe uterine cavity with ring forceps to detect retained membranes or placental fragment
  - Dilate cervix as forceps is withdrawn through os
  - Either culture endometrium or treat empirically

Post-Partum Endometritis: Treatment

- Most cases require admission for IV antibiotics
  - Clindamycin+ gentamycin good first-line abx
  - If no response <48 hours, add ampicillin
  - If all fails, heparinize for presumed septic pelvic thrombophlebitis
- Mild post-partum endometritis (14 days)
  - Oral fluoroquinolones ± metronidazole
  - Doxycycline ± metronidazole
  - Amoxocillin/ clavulanate (Augmentin)

Post Abortal Syndrome (PAS)

- Incidence: 0.2%; assoc with small flexible cannula
- Uterus fills with clots, os blocked, can't contract; hypotonia leads to continued bleeding
- Presentation: 1 hour - 7 days post-operatively
- Symptoms: intense uterine cramps/ abdominal pain (one side worse), diaphoretic, lightheaded
- Signs: uterus tender, tense, enlarged
- Treatment: reevacuation, methylergonovine x 3d

Physiologic Uterine Cramps

- Uterine cramps, bleeding often increases 3-5 days after the abortion procedure
  - Lasts for 1-3 days, then eases
- Diagnosis
  - Uterus firm, external os closed
  - No (or minimal) corpus tenderness
  - UTZ shows linear stripe (empty cavity)
- Treatment consists of NSAIDs, abdominal heat, rest, and time

Undetected Perforation

- May cause delayed hemoperitoneum or peritonitis
- Usual presentations are
  - Broad ligament hematoma
  - Acute peritoneal signs with findings of infection or sepsis: uterine perforation with bowel injury
  - Diffuse pelvic and cul-de-sac tenderness: perforation with hemoperitoneum
- Management
  - Uncertain diagnosis: diagnostic laparoscopy
  - Diagnosis certain: exploratory laparotomy

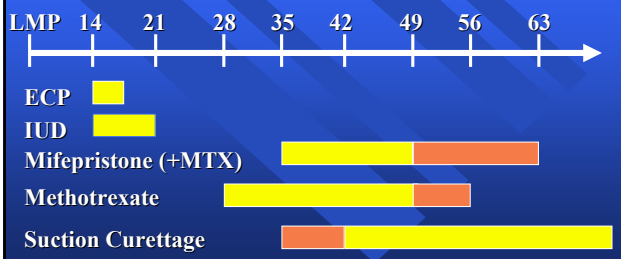
Post-Abortal Endometritis

- Incidence: 0.5-3% of abortions
- Risk factors
  - Advanced gestational age
  - Local anesthesia
  - Untreated GC or chlamydia
- Presentation
  - Uncomplicated: uterus firm, os closed, no abdominal signs
  - RPOC + Endometritis: uterus tender, boggy, enlarged; open os; adnexa non-tender or mildly tender
  - Septic abortion: uterus and adnexa tender, febrile, tachycardia, peritoneal signs

Post-Abortal Endometritis

- Pregnancy test result can be positive or negative
- Treatment:
  - Uncomplicated: doxycycline ± metronidazole x 14 days; optional reaspiration
  - RPOC + Endometritis : antibiotics x14 days, *always* reaspirate
  - Septic abortion: hospitalize; double or triple antibiotics; reaspiration as soon as stable; KUB for evidence of perforation or *Clostridia*

Post-Ovulatory Fertility Control



Mifepristone + Misoprostol Protocol

- **1st visit** — Counseling + pelvic ultrasound
  Mifepristone PO
  ⎮ 2 days
- **2nd visit** — Misoprostol 400 mcg PO (or PV)
  Observation for 4 hrs
  (Bleeding for 9-16 days)
  ⎮ 2 weeks
- **3rd visit** — Follow up examination

DANCO LABORATORIES

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www.earlyoptionpill.com

November 15, 2004

Dear Emergency Room Director:

Danco Laboratories is providing this information to assist you in taking care of patients who may present in an emergency room setting following treatment with Mifeprex® (mifepristone) and misoprostol. In particular, you should be aware of the rare events – serious infection, prolonged heavy bleeding and ruptured ectopic pregnancy – discussed below. From September 2000, when Mifeprex® was approved in the United States for marketing, through September 2004, approximately 360,000 women have been treated with Mifeprex in the U.S.

Fatal Infection Associated with Medical Abortion

- Four reported cases of death after mifepristone abortion due to septic shock
  - All cases in California
  - All occurred within one week of abortion
  - All had vaginal (vs. oral) misoprostol
  - All women were previously healthy
  - All had complete uterine evacuation
  - All died very rapidly
  - All hade evidence of bacterial infection with *Clostridium sordellii*

Fatal Infections Associated with Medical Abortion

- Clinical findings: toxic-shock syndrome
  - Absence of fever
  - Dramatic increase in WBC
  - Effect of "leaky capillaries"
    - »Tachycardia (>120 beats/min)
    - »Refractory hypotension (low blood pressure)
    - »Hemoconcentration (high hematocrit)
    - »Edema; effusions in lungs, abdomen

Fischer M, NEJM 2005;353:2552

Fatal Infections Associated with Medical Abortion

- No direct relation to misoprostol or mifepristone
- Risk estimates
  - 4 deaths in 450,000 med abortions: 1/100,000
  - Surgical abortions < 9 weeks: 0.1/100,000
- *C. sordellii* infections
  - Gram negative anaerobe
  - Produces exotoxin that triggers toxic shock
  - Reported after vaginal and C/S delivery, SAB
  - Non-obstetrical cases reported in men, women

Medical Abortion: Take Home Messages

- Counseling
  - Mention risk in informed consent process
  - Explain symptoms to watch for after procedure
- Maintain high index of suspicion, esp. if myalgia, headache, cramps (± fever)
- Treat as toxic shock syndrome: fluids, antibiotics
- No data on value of antibiotic prophylaxis
- Stay tuned for new developments, especially regarding the role of vaginal misoprostol

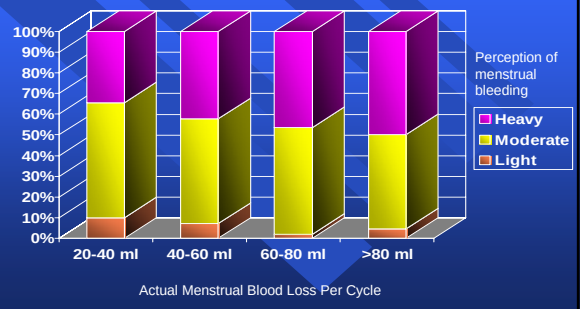
Vaginal Bleeding…What's Normal?

- Onset of menses
  - By 16 years old with 2^{0} sex characteristics
  - Start w/u at 14 y.o. if no sexual development
- Cycle length: 25-35 days
- Menstrual flow: 20-80 cc. per menses
  - Average flow: 35 cc.

Abnormal Vaginal Bleeding (AVB)

- Abnormal ***amount*** of bleeding
  - **Menorrhagia** (hypermenorrhea)
    - »Prolonged duration of menses
    - »Increased amount of bleeding per day
  - **Hypomenorrhea**
    - »Shorter menses
    - »Less flow per day

Menorrhagia: Perception vs. Reality



Hallberg, L et al, *G. Acta Obstet Gynecol Scand* 1966;45:320-51.

Abnormal Vaginal Bleeding (AVB)

- Abnormal ***timing*** of bleeding
  - **Polymenorrhea**
    - » Cycle length ≤ 24 days
  - **Metrorrhagia**
    - » "Irregularly irregular" bleeding
  - **Intermenstrual bleeding (IMB)**
    - » Bleeding between periods
  - **Post-coital bleeding (PCB)**
    - » Bleeding during or after intercourse
  - **Postmenopausal bleeding (PMB)**
    - » Ovarian failure + no bleeding for 6-12 months

Abnormal Vaginal Bleeding (AVB)

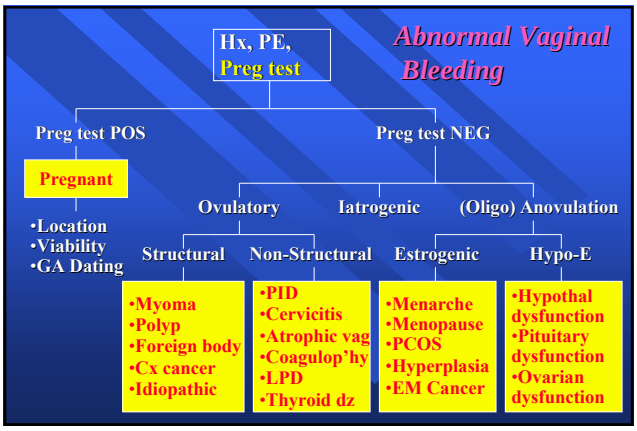
- Decreased **frequency** of bleeding
  - **Oligomenorrhea**
    - »No bleeding 36 days- 3 months
  - **Amenorrhea**
    - »No bleeding for at least 3 cycle intervals or 6 months

Symptomatic Presentation of AVB

- Is the patient pregnant?
- Is the bleeding ovulatory or anovulatory?

Ovulatory = Regular
- Menorrhagia
- Hypomenorrhea
- Polymenorrhea
- IMB
- PCB

Anovulatory = Irregular or no bleeding
- Metrorrhagia
- Oligomenorrhea
- Amenorrhea
- Post-menopausal



AVB: Structural Conditions

- Corpus Neoplasms
  - Submucous myoma
    - » Menorrhagia; rarely IMB; never metrorrhagia
  - Leiomyosarcoma
    - » Post-menopausal bleeding
  - Adenomyosis
    - » Dysmenorrhea, dyspareunia, chronic pelvic pain, sometimes menorrhagia

AVB: Structural Conditions

- Endometrial Neoplasms
  - Adenomatous hyperplasia → atypical AH → endometrial carcinoma
    - » Peri- or post-menopausal bleeding
    - » Metrorrhagia in chronic anovulator
  - Endometrial polyp
    - » IMB or PCB in 30-50 year old woman
- Cervix Neoplasms
  - Squamous cell carcinoma
  - Adenocarcinoma

AVB: Structural Conditions

- Vaginal Neoplasms
  - Squamous cell ca, clear cell (DES)
  - Childhood tumors
- Trauma/ foreign body
  - Vaginal wall laceration
  - Hymeneal ring tear/laceration
  - Vaginal foreign body
    - » Most common cause of premenarchal bleeding

AVB: Non-Structural Conditions

- Inflammatory conditions
  - Endometrium
    - » Post-partum and post-abortal endometritis
    - » Endometritis component of PID
  - Cervix
    - » Mucopurulent cervicitis (chlamydia, GC)
    - » Benign cervical ectropion
  - Vagina
    - » Atrophic vaginitis, severe vaginal trichomoniasis

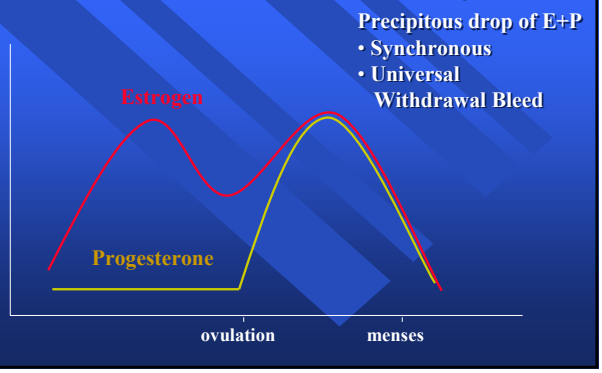
AVB: Non-structural Conditions

- **Clotting factor deficiency**
  - –Liver disease
  - –Congenital (Von Willebrands Disease)
- **Thrombocytopenia**
  - –ITP, aplastic anemia with platelet count <20,000/mm^3

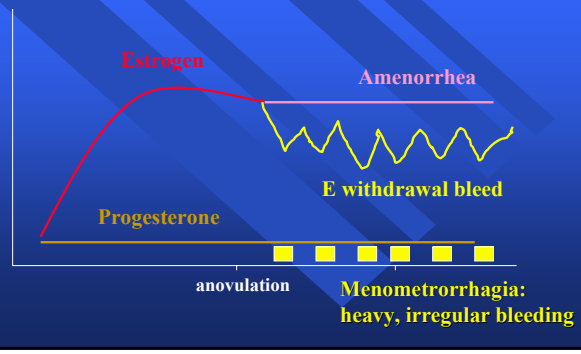
AVB: Non-structural Conditions

- Coagulopathy
  - –Menorrhagia; rarely IMB or PCB
  - –Congenital factor deficiencies mainly in teenagers with menorrhagia since menarche
  - –Thrombocytopenias
    - »Easy bruising, bleeding gums, slow to clot
    - »Suppress menses with oral progestins (e.g. continuous OCs) until platelets are up

Normal Ovarian Hormone Cycle



Abnormal Ovarian Hormone Cycles



Dysfunctional Uterine Bleeding

- What causes anovulatory bleeding?
  - –Excess **androgen**: PCOS; acute stress
  - –Excess **estrogen**: unopposed exogenous or endogenous estrogen
  - –Excess **prolactin**: prolactinoma, drugs, lactation
  - –**Age-related**: peri-menarche, perimenopause

AVB: History

- Is the patient pregnant?
  - –Pregnancy sxs, esp. breast tenderness
  - –Intercourse pattern, contraceptive use
- Is bleeding ovulatory or anovulatory?
  - –**Bleeding pattern:** regular, irregular, none
  - –**Molimenal sxs:** only in ovulatory cycles
  - –Previous history of menstrual disorders
  - –Recent onset weight gain or hirsuitism
  - –Hx bleeding dyscrasia or endocrinopathy

AVB: Physical Exam

- General: BMI ≥ 30, acne, hirsutism (PCOS)
- Breasts: galactorrhea
- Abdomen: uterine enlargement, abdominal pain
- Pelvic: uterine enlargement or softness, masses
- Cervical mucus

	Post-menstrual	Pre-ovul	Post-ovul
Amount	+ 1	+ 4	+ 1
Color	Clear	Clear	Cloudy
Spinnbarkheit	+ 1	+ 4	+ 1
Fering	+ 1	+ 4	+ 1

AVB: Laboratory

- Urine highly sensitive pregnancy test
  - *Quantitative B-hCG is not necessary*
- CBC
  - Find severe anemia; baseline value for observation
  - Platelet estimation (detect thrombocytopenia)
- Coagulation panel
  - Teens c menorrhagia or suspect coagulopathy
- Recurrent anovulatory bleeds
  - TSH, PRL
- Gonadotropin levels rarely helpful

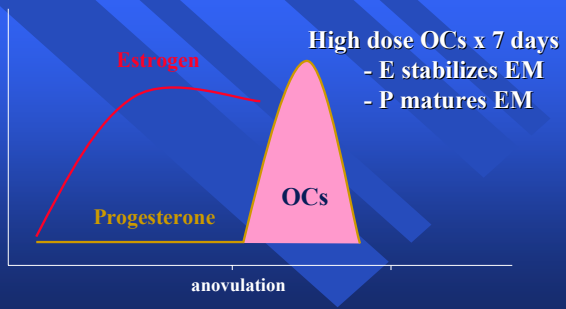
AVB: Presentation-based Management

- Acute dysfunctional (anovulatory) bleeding
- Recurrent dysfunctional bleeding
- Polymenorrhea
- Post-menopausal bleeding
- Post-coital bleeding
- Recurrent (ovulatory) menorrhagia
- Hormonal contraceptive bleeding

Management of Episodic DUB

- Substitute a pharmacologic luteal phase for missed physiologic luteal phase
- If minimal bleeding for a few days
  - Rx MPA 10 mg QD (or microP, 200 BID) x10d
  - Bleeding stops < 3 days; w/d after progestin
- Moderate or heavy bleeding > 3 days
  - Monophasic OC given BID- TID x 5-7 days
  - OC "taper" (QID-TID- BID-QD) *and then stopping* is illogical and should not be used
- Torrential bleed: surgical curettage (MUA)

Mechanism of "Chemical Curettage"



High dose OCs x 7 days
- E stabilizes EM
- P matures EM

Management of Recurrent DUB

- Pregnancy: cycle with clomiphene or metformin
- Contraception: cycle with OC
- Not interested in pregnancy or contraception
  - MPA or microP first 10-14 days each month
  - Withdraw every *other* month if pt prefers
- Peri-menopausal bleeding
  - Once hyperplasia excluded, goal=cycle control
    - »Low estrogen dose OC
    - »Cyclic sequential HT


Time flies like an arrow…
Fruit flies like a banana
GROUCHO MARX
1890 1977