Vaginitis and Abnormal Vaginal Bleeding

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- There are no relevant financial relationships with any commercial interests to disclose

Vulvovaginal Symptoms: Differential Diagnosis

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<td>Psychogenic</td>
<td>Physiologic, psychogenic</td>
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**CDC 2010: Trichomoniasis Screening and Testing**

- **Screening indications**
  - HIV positive women: annually
  - Consider if “at risk”: new/multiple sex partners, history of STI, inconsistent condom use, sex work, IDU
- **New assays**
  - Rapid antigen test: OSOM Trich Rapid
  - NAAT: Aptima TMA T. vaginalis Analyte Specific Reagent (ASR)
- **Other testing situations**
  - Suspect trich but NaCl slide neg → culture or newer assays
  - Pap with trich → confirm if low risk
- **Consider retesting 3 months after treatment**

**Trichomoniasis: Laboratory Tests**

<table>
<thead>
<tr>
<th>Test</th>
<th>Sensitivity</th>
<th>Specificity</th>
<th>Cost</th>
<th>Comment</th>
</tr>
</thead>
<tbody>
<tr>
<td>Aptima TMA</td>
<td>+4 (98%)</td>
<td>+3 (98%)</td>
<td>$$$</td>
<td>NAAT (like GC/Ct)</td>
</tr>
<tr>
<td>Culture</td>
<td>+3 (83%)</td>
<td>+4 (100%)</td>
<td>$$$</td>
<td>Not in most labs</td>
</tr>
<tr>
<td>Point of care</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><em>Affirm VP III</em></td>
<td>+3</td>
<td>+4</td>
<td>$$$</td>
<td>DNA probe</td>
</tr>
<tr>
<td><em>OSOM Rapid</em></td>
<td>+3 (90%)</td>
<td>+4 (100%)</td>
<td>$</td>
<td>CLIA waived</td>
</tr>
<tr>
<td>NaCl suspension</td>
<td>+2</td>
<td>+4 (100%)</td>
<td>$c</td>
<td>1st line</td>
</tr>
<tr>
<td>Pap smear</td>
<td>+2</td>
<td>+3</td>
<td>n/a</td>
<td>Confirm if low prevalence</td>
</tr>
</tbody>
</table>

Accuracy data: Huppert CID 2007

**CDC 2010: Vaginal Trichomoniasis Treatment**

- **Recommended regimen**
  - Metronidazole 2 grams PO single dose
  - Tinidazole 2 grams PO single dose
- **Alternative regimen** (preferred for HIV infected women)
  - Metronidazole 500 mg PO BID x 7 days
- **Pregnancy**: metronidazole safe at all gestational ages
- **Limited pregnancy data on Tinidazole**
- **Treat sex partner(s)**
- **Targeted screening for other STIs: GC, Ct, syphilis, HIV**
BV: Pathophysiology

- **Non-inflammatory** bacterial overgrowth
  - 100 x increase *Gardnerella vaginalis*
  - 1000 x increase in anaerobes
  - More pathogen types (*Mobiluncus, Mycoplasmas*)
- Suppression of \( \text{H}_2\text{O}_2 \)-producing *Lactobacillus crispatus* and *L. jensenii* (*L acidophilus* is not present)
- >50% women carry *G. vaginalis* in their vaginal flora in the absence of BV
  - Bacterial “C/S” of vaginal fluid doesn’t help in the diagnosis of BV....or of any other vaginal infection

BV: Sexually Associated or Transmitted?

- "Sexually associated” in heterosexuals
  - Rare in virginal women
  - Greater risk of BV with multiple male partners
  - Condom use decreases risk,
    - But
      - No BV carrier state identified in men
      - Treatment of partner does not affect recurrences
- Women having sex with women (WSW)
  - Infected vaginal fluid between women causes BV
  - Studies of concurrence in lesbian couples suggest horizontal transmission

BV: Clinical Diagnosis

- **Amsel Criteria**: 3 or more of
  - Homogenous white discharge
  - Amine odor (“whiff” test)
  - \( \text{pH} \geq 4.5 \) (most sensitive)
  - Clue cells > 20% (most specific)
- **Spiegel criteria, Nugent score**: Gram stain with
  - Few or no gram positive *Lactobacillus spp.*
  - Excess of other gram negative morphotypes

Characteristic Discharge With BV
### BV: Clue Cells on Saline Suspension

- >20% of epithelial cells are clues
- Reduced Lactobacilli
- Ragged cell border

### BV: Laboratory Tests

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<thead>
<tr>
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<th>Sensit</th>
<th>Specif</th>
<th>Cost</th>
<th>Comment</th>
</tr>
</thead>
<tbody>
<tr>
<td>Nugent score</td>
<td>+4</td>
<td>+4</td>
<td>$CC$</td>
<td>Labor intensive</td>
</tr>
<tr>
<td>Point of care tests</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>* Affirm VP III</td>
<td>+4</td>
<td>+3</td>
<td>$$$</td>
<td>DNA probe</td>
</tr>
<tr>
<td>* OSOM BV Blue</td>
<td>+3</td>
<td>+3</td>
<td>$$</td>
<td>CLIA moderate</td>
</tr>
<tr>
<td>* G vag PIP</td>
<td>+2</td>
<td>+3</td>
<td>$$$</td>
<td>CLIA moderate</td>
</tr>
<tr>
<td>pH + amine</td>
<td>+2</td>
<td>+2</td>
<td>$</td>
<td>CLIA waived</td>
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<tr>
<td>Amsel criteria</td>
<td>+3</td>
<td>+2</td>
<td>$CC$</td>
<td>1st line</td>
</tr>
<tr>
<td>Pap smear</td>
<td>+1</td>
<td>+2-3</td>
<td>n/a</td>
<td>Coccobacilli</td>
</tr>
</tbody>
</table>

### Who Should Be Tested for BV?

- **Routine screening** (asymptomatic): not indicated
- **Diagnostic testing**
  - Check discharge, amines, vaginal pH, clue cells
- **Microscopy not available or inconclusive**
  - Affirm VP III
  - OSOM BV Blue
  - *G vaginalis* PIP, pH+amine test cards
- **“Shift in vaginal flora” on Pap**
  - No consensus, but poor correlation with BV...most experts recommend no further follow up

### CDC 2010: BV Treatment

**Recommended regimens**
- Metronidazole 500 mg PO BID x 7 days
- Metronidazole gel 0.75% 5g per vagina QD x 5 days
- Clindamycin 2% cream 5g per vagina QHS x 7 days

**Alternative regimens**
- Tinidazole 2 g PO QD for 3 days
- Tinidazole 1 g PO QD for 5 days
- Clindamycin 300 mg PO BID x 7 days
- Clindamycin ovules 100 mg per vagina QHS x 3 days
CDC 2010: Recurrent BV

- Consider suppression with metronidazole vaginal gel twice weekly for 4-6 months (after full initial treatment)
- No evidence yet to support use of probiotics
- Don’t douche...with anything!
- Use of condoms by male partners may reduce recurrences
- Clean sex toys (or use condoms) between uses
- Avoid vaginal insertion after anal insertion of a finger or penis

CDC 2010: VVC Classification

- **Uncomplicated VVC (80-90%)**
  - Sporadic or infrequent VVC, and
  - Mild-to-moderate VVC, and
  - Likely to be Candida albicans, and
  - Immunocompetant
- **Complicated VVC (10-20%)**
  - Recurrent VVC, or
  - Severe VVC, or
  - Non-albicans candidiasis, or
  - Uncontrolled DM, immunosuppression, pregnancy

VVC: Laboratory

- **KOH suspension**
  - C. albicans: pseudohyphae and blastospores (buds)
  - C. glabrata: blastospores only
- **NaCl suspension**: many WBC, normal lactobacillus
- **pH**: 4-6
- **Amine test**: negative
- **Confirmatory tests**
  - Point of care test: Affirm VP III
  - Candida culture (not: fungus culture)
  - Candida PCR

Treatments for VVC

<table>
<thead>
<tr>
<th>Drug</th>
<th>Over the Counter</th>
<th>Prescription</th>
</tr>
</thead>
<tbody>
<tr>
<td>Butoconazole</td>
<td>X</td>
<td></td>
</tr>
<tr>
<td>Clotrimazole</td>
<td>X X</td>
<td>X</td>
</tr>
<tr>
<td>Miconazole</td>
<td>X X X</td>
<td></td>
</tr>
<tr>
<td>Terconazole</td>
<td>X X</td>
<td></td>
</tr>
<tr>
<td>Tioconazole</td>
<td>X X</td>
<td></td>
</tr>
<tr>
<td>Fluconazole (PO)</td>
<td></td>
<td>X</td>
</tr>
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</table>
**CDC 2010: Uncomplicated VVC Treatments**

- Non-pregnant women
  - 3 and 7 day topicals have equal efficacy and price
  - Offer either: 1 or 3 day topical or oral fluconazole
    - Topical: quickly soothing, but inconvenient
    - Oral: convenient, but effect is not immediate
- If first treatment course fails
  - Re-confirm diagnosis (r/o dual infection)
  - Treat with an alternate antifungal drug
  - Perform Candida culture to confirm and speciate
- No role for nystatin, candididin

**CDC 2010: Complicated VVC Treatment**

**Severe VVC**
- Advanced findings: erythema, excoriation, fissures
- Topical azole therapy for 7-14 days, or

**Compromised host**
- Topical azole treatment for 7-14 days
- Fluconazole 150 mg PO; repeat Q3 days 1-2 times

**Pregnancy**
- Topical azoles for 7 days

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**CDC 2010: Complicated VVC Treatment**

**Recurrent VVC (RVVC)**
- > 4 episodes of symptomatic VVC per year
- Most women have no predisposing condition
  - Partners are rarely source of infection
- Confirm with Candidal culture before maintenance therapy; also check for non-albicans species
- Early treatment regimen: self-medication 3 days with onset of symptoms

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**CDC 2010: Complicated VVC Treatment**

**Recurrent VVC: Treatment**
- Treat for 7-14 days of topical therapy or fluconazole 150 mg PO q 72h x3 doses, then
- Maintenance therapy x 6 months
  - Fluconazole 100-200 mg PO 1-2 per week
  - Itraconazole 100 mg/wk or 400 mg/month
  - Clotrimazole 500 mg suppos 1 per week
  - Boric acid 600 mg suppos QD x14, then BiW
  - Gentian violet: Q week x2, Q month X 3-6 mo
Vaginal Bleeding...What’s Normal?

- Onset of menses
  - By 16 years old *with* 2° sex characteristics
  - Start evaluation at 14 years of age if no sexual development
- Cycle length: 24-35 days
- Menstrual days: 2-7 days
- Menstrual flow: 20-80 cc. per menses
  - Average flow: 35 cc. per menses

Abnormal Vaginal Bleeding (AVB)

**Symptom Definitions**

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

Abnormal Vaginal Bleeding

**Symptom Definitions**

- Abnormal *.timing* of bleeding: REGULAR Cycles
  - *Polymenorrhea*: cycle length < 24 days
  - *Intermenstrual bleeding* (IMB):
    - 7 days
    - 14 days
    - 7 days
    - 14 days
    - 7 days
  - *Post-coital bleeding* (PCB):
    - 7 days
    - 7 days
    - Intercourse
    - 7 days
    - Intercourse
    - 7 days
Abnormal Vaginal Bleeding Symptom Definitions

- Abnormal **timing** of bleeding: **IRREGULAR** Cycles
  - **Metrorrhagia**
    - Light “irregularly irregular” bleeding
  - **Menometrorrhagia**
    - Heavy “irregularly irregular” bleeding

- **Post-menopausal**: bleeding >1 year after menopause

- Decreased frequency of bleeding
  - **Oligomenorrhea**
    - No bleeding 36 days-3 months
  - **Amenorrhea**
    - No bleeding for...
      - 3 cycle intervals or
      - 6 months (in oligomenorrheic women)

Abnormal Vaginal Bleeding

- Is the patient pregnant?
- Is it uterine?
- Is the bleeding pattern ovulatory or anovulatory?

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

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

Abnormal Vaginal Bleeding

- Hx, PE, Preg test
  - Preg test POS
    - *Pregnant*
      - Location
      - Viability
      - GA Dating
  - Preg test NEG

- Location
- Viability
- GA Dating
**Non-Uterine Conditions: Cervix**

- **Cervix Neoplasms:** IMB, PCB, PMB
  - Squamous cell carcinoma
  - Adenocarcinoma

- **Infections:** IMB, PCB, menorrhagia
  - Mucopurulent cervicitis (chlamydia, gonorrhea, mycoplasma hominis)

- **Benign cervical ectropion:** PCB
  - Exposed columnar epithelial cells on ectocervix
  - Red appearance; bleeds to touch

**Non-Uterine Conditions: Vagina**

- **Vaginal inflammation (IMB, PCB, PMB)**
  - Atrophic vaginitis
  - Severe vaginal trichomoniasis

- **Trauma/ foreign body**
  - Vaginal wall laceration (PCB)
  - Hymeneal ring tear/laceration (PCB)
  - Vaginal foreign body (esp. pre-menarchal bleeding)

- **Vaginal neoplasms**
  - Squamous cell cancer, clear cell (DES)
  - Childhood tumors

**Non-Uterine Conditions: Other**

- **Urethra (post-void bleeding)**
  - Urethral caruncle
  - Squamous or transitional cell cancer

- **Anus (bleeding after wiping)**
  - External or internal hemorrhoid
  - Anal fissure
  - Genital warts
  - Squamous cell cancer
### FIGO System for AUB, 2011

#### Structural Conditions
- **P**: Endometrial polyp
  - IMB or PCB in 30-50 year old woman
- **A**: Adenomyosis
  - Dysmenorrhea, dyspareunia, chronic pelvic pain, sometimes menorrhagia
- **L**: Leiomyoma
  - Submucous myoma
  - Menorrhagia; rarely IMB; never metrorrhagia

#### Non-Structural Conditions
- **M**: Malignancy and hyperplasia
  - Adenomatous hyperplasia (AH) → atypical AH → endometrial carcinoma
    - Post-menopausal bleeding
    - Recurrent perimenopausal metrorrhagia
    - Chronic anovulator (PCOS) with metrorrhagia
  - Leiomyosarcoma
    - Post-menopausal bleeding

Munro MG, et al, FIGO classification system (PALM-COEIN) for causes of abnormal uterine bleeding in nongravid women of reproductive age, Int J Gynecol Obstet (2011)
Coein: Coagulopathy

- Clotting factor deficiency or defect
  - Liver disease
  - Congenital (Von Willebrand's Disease)
- Platelet deficiency (thrombocytopenia) with platelet count <20,000/mm$^3$
  - Idiopathic thrombocytopenic purpura (ITP)
  - Aplastic anemia
- Platelet function defects

Screen for underlying disorder of hemostasis if any of

- Heavy menstrual bleeding since menarche
- One of the following
  - Post-partum hemorrhage
  - Bleeding associated with surgery
  - Bleeding associated with dental work
- Two or more of the following
  - Bruising 1-2 times per month
  - Epistaxis 1-2 times per month
  - Frequent gum bleeding
  - Family history of bleeding symptoms

Munro M, Int J Gynecol Obstet (2011)

Coein: Ovulatory

- Anovulation
  - Age: peri-menarche and perimenopause
  - PCOS
  - Stress
- Hypothyroidism
- Luteal phase defects

Normal Ovarian Hormone Cycle

- Estrogen
- Progesterone
- Precipitous drop of E+P
  - Synchronous
  - Universal
  - Withdrawal Bleed
**Abnormal Ovarian Hormone Cycles**

- **Estrogen**
- **Progesterone**
- **Amenorrhea**
- **E withdrawal bleed**
- **Menometrorrhagia: heavy, irregular bleeding**

**COEIN: Ovulatory**

- Mainly due to anovulatory bleeding
  - **Age-related**: peri-menarche, perimenopause
  - **Estrogenic**: unopposed exogenous or endogenous estrogen
  - **Androgenic**: PCOS; CAH, acute stress
  - **Systemic**: Renal disease, liver disease
- Diagnosis of exclusion
  - Menometrorrhagia *not* due to by anatomic lesion, medications, pregnancy

**COEIN: Ovulatory**

- Hyperthyroidism or hypothyroidism
  - Bleeding can be excessive, light, or irregular
  - Only severe, uncorrected thyroid disease causes abnormal bleeding patterns
  - Normal pattern when corrected to euthyroid
  - 1º hypothyroidism assoc. with 2º amenorrhea
    - Low $T_4$ $\rightarrow$ high TRH $\rightarrow$ high TSH $\rightarrow$ normal $T_4$
    - Low $PRL$ $\rightarrow$ amenorrhea + galactorrhea
- **Luteal Phase Defect (LPD)**
  - Luteal phase lasts 7-10 days (vs. 14 days) or inadequate peak luteal phase progesterone ($P$)
- Diagnosis
  - Polymenorrhea ("periods every 2 weeks")
  - Mid-luteal phase $P$ level between 4-8 ng/ml
  - Endometrial biopsy >2 days out of phase
- Management
  - Unexplained infertility: clomiphene, $P$ supplement
  - Pregnancy not desired: observation or OCs to cycle
**COEIN: Endometrial**

- **Idiopathic**
  - Unexplained menorrhagia
- **Endometritis**
  - Post-partum
  - Post-abortion endometritis
  - Endometritis component of PID
- In teens, PID commonly presents with abnormal bleeding (menorrhagia, IMB), not pelvic pain
  - Any teen with abnormal bleeding + pelvic pain requires bimanual exam to evaluate for PID

**COEIN: Iatrogenic Conditions**

- **Anticoagulants**
  - Over-anticoagulation: menorrhagia
  - Therapeutic levels will not cause bleeding problems
- **Chronic steroids, opiates**
- **Progestin-containing contraceptives**
- **Intrauterine Contraception (IUC)**
  - “Normal” side effect menorrhagia
  - PID, pregnancy (IUP or ectopic), perforation, expulsion

**COEIN: Not Classified**

- Chronic endometritis
- AVM
- Myometrial hypertrophy

**AVB: History**

- **Is the patient pregnant?**
  - Pregnancy symptoms, esp. breast tenderness
  - Intercourse pattern
  - Contraceptive use
- **Is it uterine?**
  - Coincidence with bowel movement and wiping, during or after urination
  - Pain or irritation of vagina, introitus, vulva, perineum, or anal skin
AVB: History

- Is bleeding ovulatory or anovulatory?
  - Bleeding pattern: regular, irregular, none
  - Molimenal symptoms: only in ovulatory cycles
  - Previous history of menstrual disorders
  - Recent onset weight gain or hirsuitism
  - Menopausal symptoms
  - History of excess bleeding; coagulation disorders
  - Current and past medications; street drugs
  - Chronic medical illnesses or conditions
  - Nipple discharge from breasts

AVB: Physical Exam

- General: BMI ≥ 30
- Skin: acne, hirsutism, acanthosis nigricans; bruising
- Breasts: galactorrhea
- Abdomen: uterine enlargement, abdominal pain
- Pelvic exam
  - Vulva and perineum
  - Anal and peri-anal skin
  - Speculum: vaginal walls and cervix
  - Bimanual: uterine enlargement, softness, masses

AVB: Laboratory

- Urine highly sensitive pregnancy test
  - *Quantitative B-hCG is unnecessary*
- CBC
  - Find severe anemia; baseline value for observation
  - Platelet estimation (detect thrombocytopenia)
- TSH, Prolactin
  - Amenorrhea or recurrent anovulatory bleeds *only*
- FSH, LH levels are *unnecessary*

AVB: Imaging Studies

- Mainly for evaluation of ovulatory AUB if no response to treatment or suspect anatomic defect
- Not useful for demonstrating or excluding hyperplasia in premenopausal women
- Saline infusion sonogram (SIS) helpful for polyps, submucus myomata
  - 80% sensitivity, 69% specificity compared to hysteroscopy
AVB: Presentation-based Management

- Acute dysfunctional (anovulatory) bleeding
- Recurrent dysfunctional bleeding
- Post-coital bleeding
- Recurrent (ovulatory) menorrhagia
- Postmenopausal bleeding (PMB)

Note: a menstrual calendar will help to differentiate these conditions

Management of Acute DUB

- Substitute a pharmacologic luteal phase for missed physiologic luteal phase
- If minimal bleeding for a few days
  - Rx MPA 10-20 mg QD (or microP, 200 BID) x10d
  - Bleeding stops < 3 d; menses after progestin ended
- Moderate or heavy bleeding > 3 days
  - Monophasic OC taken BID-TID x 7 days, then daily OC for 3 weeks (or longer)
  - Using “OC taper” and then stopping is illogical
- Torrential bleed: surgical curettage (MUA)

Mechanism of “Chemical Curettage”

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

Oral MPA and COCs for Acute Uterine Bleeding (AUB)
Munro MG, et al Obstet Gynecol 2006;108:924-9

- 40 women with non-anatomic AUB randomized to
  - MPA 20 mg TID, then QD for 3 weeks vs
  - COC (1 mg nor + 35 mcg EE) TID x1 week, QD x3 wks
- Results
  - Median time to bleeding cessation was 3 days
  - Cessation in 88% OC group, 76% in MPA group
  - Surgery avoided in 100% MPA, 95% COC subjects
  - Compliance similar in both groups
  - “Would use again”...81% MPA, 69% COC
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 or every other month if pt prefers fewer menses
  - Place LNG-IUS (Mirena)
  - Consider endometrial ablation if childbearing completed
- Perimenopausal bleeding
  - Once hyperplasia excluded, the goal is cycle control
    - Low estrogen dose OC
    - Cyclic sequential EPT

Post-coital Bleeding (PCB)

Differential Diagnosis

- Anatomic
  - Fragile (friable) ectropion
  - Urethral lesion
- Infections
  - Endocervix: GC, Ct, Ureaplasma, M genitalium
  - Cervical or vaginal warts
  - Endometritis (acute or chronic)
- Neoplastic
  - Endocervical or endometrial polyp
  - Vaginal, cervical, endocervical, or endometrial invasive cancer (not VaIN, CIN)

Post-coital Bleeding: Evaluation

- Vaginal exam
  - Epithelial lesions; foreign body; urethral lesion
- Cervical exam
  - Ectropion, cervical leukoplaikia or warts, cervical mucopus, endocervical polyp
- Cervical tests
  - GC/Ct test, Pap (if not performed recently)
  - Endocervical curettage (ECC), as Pap is often falsely negative in women with endocervical adenocarcinoma
- If at risk for endometrial hyperplasia, consider EMB
- If all negative, SIS to evaluate endometrial polyp

Post-coital Bleeding: Treatment

- Endocervicitis
  - GC, Ct: treat with cefixime, azithromycin
  - If Ureaplasma or Mycoplasma suspected, treat with doxycycline for 7 days or azithromycin 1 gm
- Cervical or vaginal warts
  - After biopsy, cryotherapy or 5-FU cream
- Fragile ectropion
  - After infection and CIN excluded, cryotherapy
- Endometritis
  - Doxycycline 100 mg PO BID x 14 days
Recurrent Menorrhagia

- **Differential diagnosis**
  - Endometrial polyp
  - Submucus myoma
  - Coagulopathy: vWD, ITP, liver disease
  - Idiopathic

- **Diagnostic**
  - Coag panel: consult with hematologist
  - Saline Infusion Sonography (SIS)
  - Hysteroscopy
  - NOT endometrial biopsy or pelvic US alone

Recurrent Menorrhagia

- **Submucous myoma (fibroids)**
  - Medical: OCs, progestins, tranexamic acid
  - LNG-IUS (Mirena)
  - Myomectomy
    - Laparoscopy, hysteroscopy, or laparotomy
  - Uterine artery embolization (UAE)
  - Hysterectomy (VH, LAVH, LASH)
  - GnRH-a (Lupron) is given for 1-3 months only
    - To facilitate surgery by reducing myoma volume
    - To induce amenorrhea to treat severe anemia

Tranexamic Acid (Lysteda) for HMB

- **FDA**: treatment of cyclic heavy menstrual bleeding
- **Mechanism** of action is antifibrinolytic
- **Use**: 1,300 mg (two 650 mg tablets) TID for up to 5 days
- **Contraindications**
  - Active thromboembolic disease
  - History or intrinsic risk of DVT
- **Cautions**
  - Concomitant therapy with OCs may further increase the risk of blood clots, stroke, or MI
  - Women using CHC should use only if a strong medical need and benefit outweighs risk of TE event

Recurrent Menorrhagia

- **Idiopathic menorrhagia**
  - Oral contraceptives (extended regimen or cycle)
  - NSAIDS (before and during menses)
    - Ibuprofen (400 mg tid), naproxen Na (275 mg every 6 hours after a loading dose of 550 mg)
  - LNG intrauterine system (Mirena)
  - Tranexamic acid (Lysteda)
  - Endometrial ablation
  - Hysterectomy (VH, LAVH, LASH)
**1st Generation Treatment:**

“Rollerball” Endometrial Ablation

- **Technique**
  - Hysteroscopy, with fluid distention of endometrium
  - Rollerball electrocautery of EM, fundus in strips
- **Advantages**
  - Direct visualization of the endometrial cavity
  - Permits removal of polyps, submucous fibroids
- **Disadvantages**
  - Requires general or regional anesthesia
  - Risk of fluid overload, burn injuries, perforation
  - Training and expertise in hysteroscopy

**Global Endometrial Ablation**

- Bipolar Dessication (NovaSure™)
- Cryoablation (Her Option™)
- Thermal Balloon (Thermachoice™, Cavitum®)
- Microwave Endometrial Ablation (Microsulis)
- Hydrothermal Ablation (Hydro ThermAblator™)
- Radiofrequency Thermal Balloon

**Endometrial Ablation vs Hysterectomy**

- **Advantages**
  - Office procedure or outpatient surgery
  - Very low rate of major complications
  - Rapid post operative recovery period
  - Less time consuming and costly vs hysterectomy
- **Disadvantages**
  - Amenorrhea in 50-70%, but >95% have less bleeding
  - May fail over time; 2nd ablation required in 5-10%
  - Reduces fertility, but not highly effective contraception
  - Cervical, endometrial cancer may occur