Abnormal Uterine Bleeding: The Minimally Invasive Approach

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Objectives

- Discuss the definition of AUB
- Classification of AUB
- Diagnosis and work-up
- Latest recommendations
- Minimally invasive treatment and procedures
“Menstrual flow outside normal volume, duration, regularity, or frequency.”

Problem #1

- These parameters can be very subjective.
- My normal is not your normal.
- Internet, blogs, social media, confusing patients
- Many factors can affect these criteria (age, medical problems, BMI, medications.)
Problem #2
  • Lack of consensus with what is considered normal.

Problem #3
  • Sometimes what patients consider abnormal is really normal.
• 20-30% of outpatient gynecologic visits
• 70% gynecologic consults after age 40
• Hysterectomy is the 2\textsuperscript{nd} most common procedure performed in the U.S.(rep.age)
• Huge economical impact in modern medicine.
• Normal duration is usually 5 days of flow
• Normal cycle between 21 and 35 days
• Descriptive terms
  ◦ Menorrhagia: >80 ml loss
  ◦ Metrorrhagia: bleeding between cycles
  ◦ Polymenorrhea: bleeding more often than 21 days
  ◦ Oligomenorrhea: bleeding less than every 35 days
• New classification: PALM-COEIN
  ◦ Effort to create a universally accepted system
  ◦ Introduced in 2011 by FIGO
  ◦ Supported by ACOG
  ◦ Standardizes the terminology to describe AUB
  ◦ Classifies bleeding by pattern and etiology
  ◦ Eliminates DUB as a term used for diagnosis
PALM-COEIN Classification

- Abnormal Uterine Bleeding (AUB)
  - Heavy menstrual bleeding (AUB/HMB)
  - Intermenstrual bleeding (AUB/IMB)

PALM: Structural Causes
- Polyp (AUB-P)
- Adenomyosis (AUB-A)
- Leiomyoma (AUB-L)
  - Submucosal myoma (AUB-Lsu)
  - Other myoma (AUB-Lo)
- Malignancy & hyperplasia (AUB-M)

COEIN: Nonstructural Causes
- Coagulopathy (AUB-C)
- Ovulatory dysfunction (AUB-O)
- Endometrial (AUB-E)
- Iatrogenic (AUB-I)
- Not yet classified (AUB-N)
Work-up

- Detailed history and physical examination
  - Family history: key element (15-20% HX bleeding disorder)
  - Look for weight, signs of PCOS, signs of thyroid disease, diabetes, size of uterus, cervical or vaginal masses, petechiae, ecchymoses
  - Always put a speculum inside!
Box 1. Clinical Screening for an Underlying Disorder of Hemostasis in the Patient With Excessive Menstrual Bleeding

Initial screening for hemostasis in patients with excessive menstrual bleeding: medical history (positive screen comprises any of the following):

- Heavy menstrual bleeding since menarche
- One of the following:
  - Postpartum hemorrhage
  - Surgery-related bleeding
  - Bleeding associated with dental work
- Two or more of the following symptoms:
  - Bruising
  - Epistaxis
  - Frequent gum bleeding
  - Family history of bleeding symptoms
Laboratory Evaluation

- Pregnancy test – Don’t forget!
- CBC
- TSH
- PAP Smear
- STD’s screening
- Coagulation factors
- vW cofactor activity or antigen if disorder suspected
- Transvaginal ultrasound
- Sonohysterography
- Hysteroscopy
- MRI sometimes useful
- Transabdominal ultrasonography for non-sexual active pts.
Fibroid - Sonogram
Polyp - Hysteroscopy
A 25 Y/O, P0, comes to the office with a chief complaint of irregular cycles since November 2013. Pt is married, using OCP’s for contraception. She has no medical problems, and her social and family history is unremarkable. She said started spotting every 2 weeks since November, stopped bleeding in January and a home pregnancy test was negative X 3. A pelvic examination revealed 18-week size uterus and normal cervix and vagina.

What is the differential diagnosis?
• UPT was positive
• Ultrasound revealed a normal intrauterine gestation at 18 weeks with no placental abnormalities.
• It’s a girl!
• ALWAYS DO A PREGNANCY TEST!
• Medication
  ◦ OCP’s very effective for AUB and pain
    • First line therapy
    • May take time to work
    • Contraindicated for some patients
    • Low satisfaction rate
    • False expectations
    • May not work in the presence of fibroids
• GnRH
  ◦ Reduction of fibroid volume up to 60%
  ◦ Takes time to work
• Leuprolide acetate:
  ◦ Approved for pre-operative therapy in women with anemia
  ◦ Very challenging to get approved
  ◦ Temporary effects
  ◦ Significant side effects, including pseudo-menopause and bone density issues
  ◦ Add-back therapy usually needed

Alternatives to Surgery
Alternatives to Surgery

- Aromatase inhibitors
  - Not yet approved
  - Little data
  - It may work for fibroids

- Progesterone
  - Oral or intramuscular very effective, but low satisfaction rate
Alternatives to Surgery

- Uterine artery embolization
  - Used for fibroids
  - Performed by IR
  - Uterine arteries are embolized via TC femoral artery resulting in devascularization
  - Goal: involution
  - Results are mixed
  - Studies are controversial
  - Higher minor complication rates in some studies
  - High reoperation rate
  - Very unpredictable results
Alternatives to Surgery

- **IUD**
  - Levonorgestrel
    - Approved for AUB
    - Very effective
    - Up to 3-5 years of use
    - Difficult insertion in some nulliparous women, but not contraindicated
    - Mechanism doesn’t affect ovulation
Endometrial ablation

- Background
- 1930’s – radiofrequency probe
- 1960’s – cryoablation
- 1980’s – laser ablation
  - Used through a operating hysteroscope
- 1990’s – development of newer devices
• Indication: menorrhagia in premenopausal women with normal endometrial cavities with no desire for childbearing.
• Fail other therapies or have contraindication to them.
• Goal: improvement of symptoms, NOT amenorrhea.

Endometrial Ablation
Pre-Op Assessment

- Endometrial sampling
- Ultrasound
- Saline infusion sonohysterography
- Hysteroscopy
- Assessment of size and length of cavity or masses
- Cervical stenosis
- Tolerance
Endometrial Ablation

Pre-procedure preparation (office)
- 1 or 2 days prior, NSAIDS
- Very light meal in a.m.
- Arrive early and take the following:
  - Xanax: 1 mg or equivalent
  - Ondansetron: 4-8 mg or equivalent
  - Toradol: 30-60 mg IM
  - Hydrocodone: 5-10 mg orally
  - Misoprostol: 200 μg (controversial)
  - Paracervical block (Carbocaine or Ropivicaine + Xylocaine)
• Laser and resectoscopic ablation (do it yourself)
  ◦ Use of a loop/ball/barrel/spiked electrode electrosurgical desiccation and coagulation.

**Devices & Techniques**
- Non-resectoscopic systems
  - Do not require operative scope
  - Require less training and expertise
  - All have similar outcomes
  - All devices are attached to a unit and activated by energy

Ablation
• Cryotherapy
  ◦ Disposable probe attached to a handle and control unit
  ◦ Device is directed to the cornua on each side and the low uterine segment
  ◦ Creation of an expanding freeze zone
  ◦ Takes approximately 15-20 minutes
  ◦ Very well tolerated
  ◦ Minimal discomfort
  ◦ Minimal anesthesia required
  ◦ Ultrasound guided

Non-Resectoscopic Systems
Cryotherapy
Cryotherapy Video

- http://youtu.be/6F3gNFL5IL8
- http://www.herooption.com/Professionals/About/animation.htm
NovaSure
- Automated ablation
- Single-used probe attached to a control unit
- Bipolar mesh
- The system detects perforation and integrity of the cavity.
- The process takes about 90 seconds.
- It applies radiofrequency energy and suction at the same time evacuating steam and debris.
NovaSure
- Ideal for normal-size uterus
- Doesn’t work well on uteri with large cavities or masses
- I prefer OR
- Very painful in the office
• Balloon-tipped catheter introduced to the cavity and then distended and heated
  ◦ Thermachoice
  ◦ Takes about 8-10 mins.
  ◦ 5% Dextrose used to inflate balloon
Hydrothermal Ablator (HTA)

- Heated free fluid
- Only non-resectoscopic system with integrated hysteroscopic monitoring (you visualize the ablation as is being performed)
- Uses normal saline
- Up to 90° C
- Up to 15 mins. procedure
### Table 1. Patient Satisfaction and Amenorrhea Rates Associated With Nonresectoscope Endometrial Ablation Compared With Resectoscopic Ablation at 12 Months*

<table>
<thead>
<tr>
<th>Device</th>
<th>Satisfaction Rate</th>
<th>Amenorrhea Rate</th>
<th>Diary Success (Score: 75 or Less)</th>
</tr>
</thead>
<tbody>
<tr>
<td>ThermaChoice (thermal balloon)</td>
<td>96/99‡</td>
<td>13.2/27.2</td>
<td>80.2/84.3</td>
</tr>
<tr>
<td>Hydro ThermAblator (heated free fluid)</td>
<td>⏪</td>
<td>35.3/47.1</td>
<td>68.4/76.4</td>
</tr>
<tr>
<td>Her Option (cryotherapy)</td>
<td>86/88¶</td>
<td>22.2/46.5</td>
<td>67.4/73.3</td>
</tr>
<tr>
<td>NovaSure (radiofrequency electricity)</td>
<td>92/93‡</td>
<td>36/32.2</td>
<td>77.7/74.4</td>
</tr>
<tr>
<td>Microwave Endometrial Ablation System (microwave energy)</td>
<td>92/93‡</td>
<td>55.3/45.8</td>
<td>87/83.2</td>
</tr>
</tbody>
</table>

*Based on U.S. Food and Drug Administration pivotal trials.
‡Based on intent to treat.
¶Patients reported being satisfied or very satisfied.
§Quality-of-life scores compared with baseline only.
‖Patients reported being very or extremely satisfied.

Complications

- Pain; especially if performed in the office
- Distention media overload
  - Low viscosity solutions leading to hyponatremia and brain edema, if severe
- Uterine trauma, perforation
- Organ injury
- Infection
- Sepsis
<table>
<thead>
<tr>
<th>Complication</th>
<th>ThermaChoice (Thermal Balloon)</th>
<th>HydroThermAblator (Heated Free Fluid)</th>
<th>Her Option (Cryotherapy)</th>
<th>NovaSure (Radiofrequency Electricity)</th>
<th>Microwave Ablation System (Microwave Energy)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Urinary tract infection</td>
<td>0.8</td>
<td>2</td>
<td>3</td>
<td>0.6</td>
<td>0.5</td>
</tr>
<tr>
<td>Vaginal infection</td>
<td>0.8</td>
<td>0</td>
<td>1</td>
<td>0.6</td>
<td>2.3</td>
</tr>
<tr>
<td>Fever</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>1.4</td>
</tr>
<tr>
<td>Endometritis</td>
<td>2.1</td>
<td>1</td>
<td>0</td>
<td>0</td>
<td>2.8</td>
</tr>
<tr>
<td>Thermal injury¹</td>
<td>0</td>
<td>1</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Abdominal pain</td>
<td>0</td>
<td>2</td>
<td>4</td>
<td>0.6</td>
<td>3.2</td>
</tr>
<tr>
<td>Hematomata</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0.6</td>
<td>0</td>
</tr>
<tr>
<td>Bleederegia</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0.5</td>
</tr>
</tbody>
</table>

*Reported during U.S. Food and Drug Administration pivotal trials.

¹Involving an extremity.


Complications
Complications

- Thermal injury
  - Rare, but has been reported
- Post-ablation tubal syndrome
  - Pain related to residual endometrium in both cornua after tubal ligation
  - Rare, but has been reported as high as 10%
  - Hysterectomy usually needed
- Pregnancy has been reported
- High risk for PTL, accreta, fetal demise
- So... which one I recommend?
  - Similar success rate for all
  - Decision is individual and determined by many factors
  - Patient should be counseled for all available options
  - Hysterectomy should be included in counseling
  - Is all about expectations
What about hysterectomy?
- Robotic vs. traditional TLH
- Controversy still present
- Similar outcomes
- More data coming
Currently, there are many options for the treatment of AUB.
The best option is always the least invasive and cost effective.
Most patients will respond to hormonal therapy successfully.