ABNORMAL UTERINE BLEEDING

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CONFLICT OF INTEREST

- None
ABNORMAL UTERINE BLEEDING VS DYSFUNCTIONAL UTERINE BLEEDING

- **AUB**
  - Chosen term in 2011 to represent the broad spectrum of bleeding abnormalities other than menstrual bleeding

- **DUB**
  - Usually refers to endocrine causes of bleeding (abnormal quantity, duration or schedule)
OBJECTIVES

- Review anatomy of female genital tract
- Overview of ‘normal’ menstrual cycle
- Overview of Abnormal Uterine Bleeding (AUB) associated with reproductive age women
- Differential diagnoses for women with AUB
- Evaluation and treatment of AUB
- Overview of AUB associated with premenarchal females
ANATOMY OF FEMALE PELVIS
BACKGROUND

• Epidemiology
  • Affects more than 20 million women in the US
  • 1/3 of all outpatient GYN visits annually are for AUB (most common non pregnancy visit)
  • Can lead to **health risks** such as anemia, general debility
  • Can be a **symptom** of an illness such as endometrial cancer, leukemia, or a coagulation disorder.
  • **Iatrogenic causes**: Progesterone withdrawal, anticoagulation therapy, antipsychotic medications, hormone replacement therapy, cancer prophylaxis (tamoxifen, aromatase inhibitors), etc.
Normal menstrual cycle: q 21-35 days

- **Sequence of hormones** are important: estrogen, followed by estrogen and progesterone, followed by withdrawal of both hormones.

- *E-P stimulation and withdrawal* produce the **most stable endometrium** and the **most reproducible** menstrual characteristics.

- E-P *withdrawal* causes enzymatic degradation and inflammatory response in the endometrium.
A “NORMAL” PERIOD

- Progesterone withdrawal
  - After secretory transformation, progesterone withdrawal induces organized sloughing of functionalis layer down to the basalis layer
  - Spiral and basal artery vasoconstriction and myometrial contractions limit bleeding
  - Thrombin-platelet plugs form

- Estrogen
  - Rising estrogen levels cover up denuded basalis layer with new functionalis endometrium, limiting bleeding
NORMAL
ABNORMAL UTERINE BLEEDING: COMMON DEFINITIONS

The perception of menstrual bleeding of abnormal quantity, duration or schedule accounts for >30% of all visits to the physician in non-pregnant, premenopausal women ages 13-50.

- **Menorrhagia**: Heavy menstrual bleeding: loss of >80ml, increased duration of flow >7 days at regular intervals
- **Mettorrhagia**: Bleeding at irregular intervals or intermenstrual bleeding
- **Menometrorrhagia**: Increased flow, prolonged duration occurring at irregular intervals
- **Polymenorrhea**: Menstrual bleeding < 21 day interval
- **Oligomenorrhea**: Menstrual cycle length >35 days
• Amenorrhea: absence of menses (transient, intermittent, or permanent)
  Primary: Absence of menarche by age 15
  Secondary: lack of withdrawal bleeding for more than 3 cycles or 6 months in a previously menstruating female

• Dysmenorrhea: painful periods
  Primary: pain associated with no structural pathology
  Secondary: pain associated with pathologic process or condition
## ETIOLOGY OF AUB

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# Causes of abnormal genital tract bleeding in women

## Genital tract disorders

### Uterus
- **Benign growths:**
  - Endometrial polyps
  - Endometrial hyperplasia
  - Adenomyosis
  - Leiomyomas (fibroids)
- **Cancer:**
  - Endometrial adenocarcinoma
  - Sarcoma
- **Infection:**
  - Pelvic inflammatory disease
  - Endometritis
  - Ovulatory dysfunction

### Cervix
- **Benign growths:**
  - Cervical polyp
  - Ectropion
  - Endometriosis
- **Cancer:**
  - Invasive carcinoma
  - Metastatic (uterus, choriocarcinoma)
- **Infection:**
  - Cervicitis

### Vulva
- **Benign growths:**
  - Skin tags
  - Sebaceous cysts
  - Condyloma acuminata

## Trauma
- Sexual intercourse
- Sexual abuse
- Foreign bodies (including intrauterine device)
- Pelvic trauma (e.g., motor vehicle accident)
- Straddle injuries

## Drugs
- **Contraception:**
  - Hormonal contraceptives
  - Intrauterine devices
- Postmenopausal hormone therapy
- Anticoagulants
- Tamoxifen
- Corticosteroids
- Chemotherapy
- Phenytoin
- Antipsychotic drugs
- Antibiotics (e.g., due to toxic epidermal necrolysis or Stevens-Johnson syndrome)

## Systemic disease

### Diseases involving the vulva:
- Crohn's disease
- Behcet's syndrome
- Pemphigoid
- Pemphigus
- Erosive lichen planus
- Lymphoma

### Bleeding disorders:
- Thrombocytopenia
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<td>Vascular tumors and anomalies in the genital tract, including</td>
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<td>(also known as uterine arterial venous malformation)</td>
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2011 terminology system proposed by the Federation of Gynecology and Obstetrics (FIGO) for AUB in nongravid reproductive age women. Goal is to avoid poorly defined or confusing terms that are still in use.
FIGO CLASSIFICATION “PALM-COEIN”

Anatomic
- Polyp
- Adenomyosis
- Leiomyomata
- Malignancy and/or hyperplasia

Nonanatomic
- Coagulopathy
- Ovulatory Disorders
- Endometrium
- Iatrogenic
- Not Classified (renal/liver disease)
P=POLYPS

- Endometrial polyps are fleshy overgrowths, arising from endometrial glands and fibrotic stroma
- Common - 10-30% present in women with AUB
  - Stromal congestion causes venous stasis and apical necrosis/bleeding
- Most are benign
- Risk factors: HTN, obesity, tamoxifen, HNPCC
- Treatment of choice: operative hysteroscopy
A=ADENOMYOSIS

- Uterine enlargement caused by ectopic nests of endometrium located deep within myometrium.
- Risk: parity and age: 90% of cases are in parous women and 80% develop in women in their 40s-50s.
- Symptoms: Menorrhagia (increased and abnormal vascularization of endometrium) and dysmenorrhea.
- Can be focal or diffuse.
- Not associated with oral contraceptives, but more common in patients on tamoxifen.
- TVUS findings subtle: increased A-P diameter or one wall thicker than the other; myometrial heterogeneity, linear striations projecting from endometrium to myometrium.
**L=FIBROIDS/ LEIOMYOMATA**

- Benign smooth muscle tumors arising from myometrium
- Estrogen and progesterone sensitive - estrogen causes growth, progestins show both stimulatory and inhibitory effects.
- Highly vascular - causes local dilation of venules and bleeding during menses from dilated venules can overwhelm hemostatic mechanisms
**M=MALIGNANCY**
ENDOMETRIAL, CERVICAL, VAGINAL, VULVAR

- **Endometrial Carcinoma**: most common gynecologic malignancy in the United States
  Vaginal bleeding (postmenopausal) most common finding, pain, pelvic fullness, foul vaginal discharge are common presenting symptoms
- **Cervical Cancer**: most common gynecologic malignancy in the world!
  Postcoital bleeding, history of abnormal pap smears, foul vaginal discharge, pain, late presenting symptoms
- **Vaginal Cancer**: primary is rare, metastatic from cervical cancer not uncommon
  Vaginal bleeding; posterior upper 1/3 of vagina moist common site
- **Vulvar Cancer**: chronic pruritus, bleeding secondary to ‘scratching’, plaque, ulcer on labia, perineum, clitoris
MAY PRESENT WITH AUB
C=COAGULOPATHY HEMOSTATIC DISORDERS

- Leukemia
- Platelet dysfunction=thrombocytopenia
- Anticoagulants
- Advanced Liver Disease
- Factor Deficiencies

Von Willebrand disease= most common inherited bleeding disorder in women and most common dyscrasia in adolescents with AUB
OVULATORY DYSFUNCTION

- Polycystic Ovarian Syndrome- most common cause-diagnosis of exclusion
- Hyperthyroidism or hypothyroidism
- Hyperprolactinemia
- Antidepressant or antipsychotic drugs
- Corticosteroids
- Estrogen-progestin contraceptives
- Chronic renal or liver disease
- Lactational amenorrhea
- Intense exercise
- Eating disorders
- Stress
- Autoimmune disorders
- Premature ovarian failure
PCOS

- Diagnosis of exclusion- ovulatory dysfunction and hyperandrogenism
  - Rotterdam Criteria: 1. Oligo or anovulation, 2. Clinical and/or biochemical signs of hyperandrogenism, 3. Polycystic ovaries

- Short term consequences
  - Irregular menses
  - Hirsuitism/ acne/ androgenic alopecia
  - Infertility
  - Obesity
  - Metabolic disturbances
  - Abnormal lipids/ glucose intolerance

- Long term consequences
  - Diabetes mellitus
  - Cardiovascular disease
  - Endometrial cancer
PCOS EFFECT

- Genetic predisposition to excess ovarian androgen secretion
- Polycystic ovary
- Hirsutism
- ↑ Testosterone levels
- ↓ SHBG levels
- Liver
- ↑ LH levels
- Insulin resistance and hyperinsulinaemia
- ↑ Insulin levels
- Genetic and dietary factors influence insulin secretion or action
- Anovulation
**E=ENDOMETRIAL BLEEDING**

- Estrogen breakthrough
  - Growing follicle makes estradiol (E2)
  - E2 thickens endometrium
  - No luteal progesterone to stabilize endometrium
  - No progestin withdrawal to allow organized sloughing
  - Endometrium outgrows blood supply and random segments detach at random intervals
  - No spiral artery constriction so bleeding can be heavy
  - Increase risk of hyperplasia/ CA due to unopposed estrogen
I=IATROGENIC

- Sexual Intercourse
- Sexual Abuse
- Foreign Bodies (including intrauterine device, retained tampon, toys)
- Pelvic Trauma
- Straddle Injuries
- Hormonal contraception
- Hormone replacement therapy
- Homeopathic therapy
N=NOT YET CLASSIFIED

- Unable to determine cause of AUB
- ?Bladder cancer
- Urethritis
- Atrophic vaginitis?
- Chronic UTI's
- Inflammatory bowel disease
- Hemorrhoids
- Post surgical bleeding from vaginal cuff
INITIAL EVALUATION

Medical History

Chief Complaint:
HPI: age of menarche/menopause, severity/duration of bleeding, pain
Past obstetric history
Past gynecologic history
PMH: current/past conditions
PSH
Medications; ASA,
ALL
SH: tobacco, etoh, drug usage, employment,
FH: gynecologic malignancies, colon/breast cancer
PHYSICAL

• Genitourinary/ Pelvic Exam:
  • **External genitalia**
    • **Vulva** - no lesions/ masses/ erythema/ excoriation
    • **Urethra (meatus)** - no discharge, gaping or prolapse
    • **Perineum** - intact, no lesions, no dovetail sign
    • **Anus** - no hemorrhoids, masses, prolapse
  • **Internal genitalia (Speculum)**
    • **Vagina** - intact, pink, moist, +/- discharge (color, odor, consistency), no prolapse or lesions
    • **Cervix** - Nulliparous/ multiparous, lesions/ masses/ discharge, friable, open/ closed, present/ absent
    • **Prolapse** - anterior/ apical/ posterior
  • **Bimanual**
    • **Tenderness** with initial/ deep penetration/ Chandelier sign/ over urethra/ bladder/ with uterine motion/ on left/ right side
    • **Uterus** - mobile, normal size, nontender, no masses, no scarring along uterosacral ligaments
    • **Adnexa** - no masses/ tenderness
    • **Recto-vaginal** - no masses/ hemorrhoids/ fissures/ scarring/ tenderness/ blood- frank and occult
CLINICAL HISTORY GUIDES WORKUP/DIFFERENTIAL

• Stable vs unstable
• Quantify blood loss
  • PBAC pictorial blood loss assessment chart
  • Anemia usually develops at losses >60mL/ cycle
• Age of onset
  • Childhood (<10yr)
  • Adolescence (12-18)
  • Reproductive (19-39)
  • Late Reproductive (40-45)
  • Menopausal Transition/ Postmenopausal (>45)
• Identify medications and systemic illnesses
• Perform a good Review of Systems
• Onset of menorrhagia in relation to dx
DIAGNOSTIC EVALUATION

• *Menstrual history and onset of bleeding problems are highly suggestive of diagnosis*

• Initial Lab tests
  • PAP, pregnancy test, CBC (Hb, plts), TSH, Vaginitis panel (culture-chlamydia, gonorrhea, Trichomonas, BV, yeast)

• Additional testing/ confirmational testing
  • Based on history: **Coagulopathy**- PT, PTT, vWF, ristocetin cofactor assay; **Endocrinopathy**- Prolactin, FSH, 17-OHP, 24 hour urinary free cortisol, testosterone and DHEA, Glucose tolerance testing; **Infectious**- PPD; **Systemic**- LFTs, renal fxn BUN, Cr, electrolytes

• Ultrasound
• Endometrial Sampling
• Hysteroscopy
• MRI/ CT
ULTRASOUND

- Transvaginal, ideally in early follicular phase
- Know normal measurements
  - Uterus
    - 6.5-10cm length, 4-6cm width, 60-200 grams, A-P 3-5cm
    - Enlarged A-P diameter = adenomysosis
  - Ovaries
    - 2.5-8 cm3 or g
  - Physiologic vs pathologic cysts
    - Simple vs complex
    - <4-10cm
  - Cervical length
- Endometrial “stripe”
  - Wide range in reproductive years 4-14mm
  - ≥ 4mm in postmenopausal women requires tissue sampling

- Sonohystogram
  - Saline infusion into endometrial cavity
  - Can detect polyps, fibroids, adhesions
ENDOMETRIAL SAMPLING

- **When to biopsy?**
- Prolonged amenorrhea (6-9 months)
- Prolonged oligomenorrhea (2-3 years)
- Age > 35
- Age < 35 for risk factors, i.e. morbidly obese, PCOS, at risk for hyperplasia
- Endometrial lining > 4mm in menopausal patients
- Tamoxifen therapy with AUB
**ENDOMETRIAL SAMPLING**

- **Endometrial Biopsy**
  - In-office procedure
  - Inexpensive
  - Positive result is accurate to diagnose cancer
  - Sensitivity 68-78%, rate of sampling failure 0-54%
  - Samples an average of 4% of endometrium (range 0-12%)
  - Postmenopausal with insufficient tissue (sampling failure)
    - 20% have uterine pathology, 3% have cancer
    - ACOG Practice Bulletin 136
- **Dilation and curettage**
  - Usually done in OR as outpatient - surgical risks
  - Can be used as both diagnostic procedure and treatment
- **Hysteroscopic Dilation and Curettage**
  - Superior to EMB and D&C - can visualize entire cavity and any abnormalities for targeted biopsies
HYSTEROSCOPY

- Gold Standard for inspection of endometrium
  - Biopsy allows for histologic diagnosis of visually abnormal areas of the endometrium
- Involves inserting a 3-5mm optic endoscope into the endometrial cavity, which is distended with saline for visualization.
- Can detect intracavitary lesions that TVUS or endometrial sampling alone may miss
  - Fibroids, polyps, endometrial cancer
- Can be done in the office or ambulatory surgery.
- May be a risk for peritoneal seeding in the setting of endometrial cancer, but there is no evidence that prognosis for patients is worsened. (Revel, 2004)
- Complications rare - hypotonic solution can lead to hyponatremia and central pontine myelinitis
MRI/ CT

- Expensive, not first line
- MRI used only for pelvic assessment as a follow up to ultrasound and only when it will give information that is not available on ultrasound
- Useful for uterine anomalies, i.e. bicornuate uterus, duplication of reproductive system, etc.
- CT or computed tomography is used to evaluate the abdomen/ pelvis in metastatic disease but has no role in routine pelvic assessment.
QUESTION

You had placed a Mirena IUD in a 28 year old patient for contraception and to control her heavy regular menstrual cycles. She tolerated the Mirena insertion well, came back for a string check 4 weeks later, and reported that her periods had significantly lightened. However, now she is coming to you 1 year after insertion complaining of spotting every day. After evaluating correct placement of the IUD and ruling out infection and pregnancy, you suspect the progestational effect has caused excessive atrophy of her endometrium. What can you offer her to help with her continuous spotting?

A. Take out the Mirena and start Depo-Provera
B. Take out the Mirena and start a progestin-only pill
C. Leave the Mirena in place and give her 7-14 days of add-back oral estrogen.
D. Leave the Mirena in place and give her combined OCPs.
QUESTION

- You have an otherwise healthy 32 year old G2P2002 28 year old patient who comes to your office because she has not had a period in 8 months and has ‘milk’ coming from her nipples. Before this, she states she had regular menstural cycles q month, lasting 5-6 days with moderate flow. bHCG in the office is negative. Past medical history is significant for bipolar disorder diagnosed this year and tonsillectomy. Denies any other symptoms, no significant family history, and she states she is in a monogamous relationship with her spouse with vasectomy used as contraception. What is the most likely etiology for her secondary amenorrhea?

  - A. Renal failure
  - B. Adrenal insufficiency
  - C. Antipsychotic medications
  - D. PCOS
CAUSES HYPERPROLACTINEMIA

- Pituitary:
  - Prolactinoma
  - Nonfunctioning adenoma
  - Hypophysitis
  - Stalk section
  - Infiltrative disease
- Hypothalamic:
  - Tumors
  - Infiltrative disease
- Secondary:
  - Renal failure
  - Primary hypothyroidism
  - Adrenal insufficiency
  - Polycystic ovary syndrome
- Physiological:
  - Pregnancy
  - Breast stimulation
  - Stress
- Medication:
  - Antipsychotics
  - Antiemetics
  - Antihypertensives
  - Estrogen
- Analytical:
  - Macroprolactin
  - Heterophilic antibodies

↑ Prolactin
HYPERPROLACTINEMIA EFFECT
### Causes of anovulation

#### Primary hypothalamic-pituitary dysfunction
- Kallman’s syndrome
- Idiopathic hypogonadotropic hypogonadism
- Tumors, trauma, or radiation of the hypothalamic or pituitary area
- Sheehan’s syndrome
- Empty sella syndrome
- Pituitary adenoma or other pituitary tumors
- Lymphocytic hypophysitis (autoimmune diseases)
- Lactational amenorrhea
- Stress
- Eating disorders
- Intense exercise
- Immaturity at onset of menarche or perimenopausal decline

#### Other disorders
- Polycystic ovary syndrome
- Hypothyroidism or hyperthyroidism
- Hormone producing tumors (adrenal, ovarian)
- Chronic liver or renal disease
- Cushing’s disease
- Congenital adrenal hyperplasia
- Premature ovarian failure, which may be autoimmune, genetic, surgical idiopathic, or related to drugs or radiation
- Turner syndrome
- Androgen insensitivity syndrome

#### Medications
- Oral contraceptives
- Progestins
- Antidepressant and antipsychotic drugs
- Corticosteroids
- Chemotherapeutic agents
ANOVULATORY BLEEDING TREATMENT

• Progestin therapy
  • Mild bleeding: medroxyprogesterone acetate 5-10mg daily x 12-14 days/month, or OCP
  • Acute/severe bleeding: MPA 10-20mg BID, norethindrone 5mg BID, OCPs BID-> continue for 3 weeks but reduce to daily dosing after 1 week
  • Levonorgesterol (Mirena) IUD

• Ablation

• Hysterectomy
NSAIDS

- Effective and well tolerated oral medications for Abnormal Uterine Bleeding
- Reduces volume of menstrual blood loss
  - Reduces rate of prostaglandin synthesis in the endometrium, leading to vasoconstriction and reduced bleeding
- Most effective for menorrhagia if used within onset of menses or just prior to start of menses
- Regimens:
  - Mefanamic acid 500mg TID x 5 days
  - Naproxen 550mg on 1st day of menses, then 275mg daily
  - Ibuprofen 600mg daily throughout menses
  - Flurbiprofen 100mg BID x 5 days
  - Meclofenamate 100mg TID for 3 days
TRANEXAMIC ACID (LYSTEDA)

- Antifibrinolytic
  - Binds to lysine binding site on tissue plasminogen activator
  - Reduced plasmin lysis of fibrin
- Stabilizes intrauterine clot, reduces bleeding by 50%
- Nonhormonal, can be used when attempting pregnancy
- Dosing:
  - 650 mg tablets
  - 2 tablets TID for up to 5 days
  - Only given during menses
  - Patients can self-adjust dose downward as desired
  - Reduce dosage with decreased renal function
  - Theoretic risk of thromboembolic disease
  - $$$ ~$300/month
LEVONORGESTEROL IUD (MIRENA)

- Contains 52mg of levonorgesteral with an initial release rate of 20 mcg/day
  - Skyla has 13.5mg of levonorgesteral with an initial release rate of 14 mcg/day
- Progestin effect is primarily local
  - Endometrial concentration is 1000 times higher than subdermal implant and plasma concentration (100-200 pg/mL) is far lower than progestin implants (350pg/mL) or pills (1500-2000 pg/mL)
  - Serum estradiol not affected; 45% of patients will have ovulatory cycle
- Approved for up to 5 years of use
- Contraindications:
  - Severe uterine distortion, active pelvic infection, known or suspected pregnancy, unexplained uterine bleeding, current breast cancer.
  - *There is no epidemiological evidence of an increased risk of breast cancer with the levonorgesteral IUD.
- ACOG: “IUDs are safe and appropriate for most women, including nulliparous and adolescents, and use of IUDs should be encouraged as a first-line approach to pregnancy prevention”
LEVONORGESTEROL IUD (MIRENA)

- Superior to NSAIDS and tranexamic acid (Milsom et al., 1991)
- Superior to medroxyprogesterone (Kaunitz, 2010)
- Superior to combined oral contraceptives (Chi, 2011)
- Effective in women with hemostatic disorders (Chi, 2011)
- Effective in fibroid-associated heavy menstrual bleeding (Magalhaes, 2007)
- Good long term acceptance (Lete, 2011)
  - 88% of eligible women would have another LNG-IUS inserted after 5 years
- Equally as effective as endometrial ablation (Kaunitz, 2009)
GNRH AGONISTS

- Synthetic derivatives of GnRH decapeptide
- Inactive orally, can be administered via intramuscular, subcutaneous, and intranasal routes
- Initially stimulate pituitary gonadotropes causing a supraphysiologic flare of FSH/ LH. Long term action down-regulate receptors in pituitary gonadotropes, causing desensitization to further GnRH stimulation. This leads to decreased estrogen and progesterone levels within 1-2 weeks of administration
- Clinical benefits: dramatic decrease in uterine/ fibroid volume, pain relief, diminished menorrhagia.
- Duration of therapy 3-6 months, if longer, need add back estrogen for bone loss. Following discontinuation, normal menses resume in 4-10 weeks and leiomyomas regrow within 3-4 months
- Side effects: decreased estrogen = vasomotor symptoms, libido changes, vaginal dryness leading to dyspareunia
ANDROGENS

- Danazol and gestrinone
- Both synthetic steroid testosterone derivatives
- Net effect is to create a hypoestrogenic and hyperandrogenic environment, inducing endometrial atrophy, as well as decreasing fibroid volume
- Prominent side effects: hirsuitism, acne, lipid abnormalities
ENDOMETRIAL ABLATION

- Outpatient procedure that removes or destroys the endometrial layers. The opposing walls of the myometrium collapse and the damaged tissue contracts and develops into a scar.

- Patient selection must be stringent!
  - Failed medical treatment (or contraindicated)
  - Does not desire fertility
  - Normal endometrial histology if > 35/ risk factors

- Success Rates
  - Menorrhagia improved 70-80%
  - Amenorrhea 15-50%

- Complications
  - Hematometra
  - Endometrial cancer
  - Pregnancy (up to 2%)
ENDOMETRIAL ABLATION

• Contraindications
  • Pregnancy or desire to become pregnant
  • Known or suspected endometrial carcinoma
  • Premalignant change of endometrium
  • Active pelvic inflammatory disease or hydrosalpinx*
  • Prior classical cesarean section or transmural myomectomy
  • Uterine anomaly
  • IUD in place*

*Relative contraindications
ENDEMOTRIAL ABLATIVE TECHNIQUES

- Hysteroscopic (roller ball, YAG laser)
- ThermaChoice (thermal balloon)
- Her Option (cryoablation)
- HydroThermAblator (hot saline)
- Novasure (radiofrequency/ wire mesh)
- Microsulis (microwave)
UTERINE ARTERY EMBOLIZATION

- Introduced in 1995
- Performed by interventional radiologists
- Not recommended for patients who desire fertility
- Success:
  - 80-90% symptom improvement
  - 2% complication rates (including deaths from infection due to degenerating fibroids)
  - Pregnancies have been reported
  - Higher risk of Premature Ovarian Failure
SUCCESS RATES OF TREATMENTS

- Anovulatory bleeding
  - Cyclic progestins: 30%
  - OCP: 50%
  - Depo-Provera: 60%
  - GnRh Agonist: 90%
- Ovulatory bleeding
  - NSAIDS: 20-50%
  - Antifibrinolytics: 50%
  - Progestin IUD: 80-90%
  - Treatment of vaginal infections: 100%
  - Surgery for lesions: 70-100%
HYSTERECTOMY

- Treatment of last resort
- 600,000/ year in US
  - 50% for fibroids
  - 25% for AUB
  - 15% for prolapse
  - Other…
- Failed medical therapy (or contraindicated)
- Documented anemia or significant menorrhagia
- Endometrial histology, >35/ risk factors
- Good surgical candidate
- 100% effective for menorrhagia (except supracervical procedures)
QUESTION

You are called to the ED to evaluate a 13 year old female patient who presented with heavy vaginal bleeding, soaking through a pad every 15-20 minutes that began yesterday. She is laying on the bed and you notice that she is pale and has naturally red hair. Mom is at bedside and states that heavy menstrual bleeding “runs in the family” and that this is her daughter’s second period, the first was not this heavy. No allergies. PMH/PSH negative. Vitals: 98.6 115 94/60 18 100% ra. CBC: WBC: 9,000 Hgb: 11 Hct: 33% PLT: 200,000. What is high on your differential diagnosis as the cause of her heavy menstrual bleeding?

A. She is redheaded
B. She has leukemia
C. Von Willebrands Disease
D. Fibroids
VAGINAL BLEEDING IN INFANTS AND GIRLS

• Neonatal withdrawal bleeding= Maternal estrogen crosses the placenta and stimulates growth of the female uterus’ endometrial lining. After birth the hormonal support is withdrawn and some female babies have an endometrial slough that results in bloody mucoid discharge or light vaginal bleeding. Self limited requires no treatment

• Vaginal foreign bodies= most common form of vaginal bleeding/discharge in young girls without a history of trauma (insert slide of tissue in vagina)

• Infections= the premenarchal vagina is very thin due to the lack of estrogen, an alkaline pH and few protective microorganisms. Strepotococcus pyogenes (group A beta-hemolytic streptococci) and Shigella are common pathogens that may result in purulent vaginal discharge/bleeding

• Lichen sclerosus= chronic mucocutaneous inflammatory disorder of unknown etiology. Purpura, telangiectasias, and hematomas occur in 20-60%. Skin very thin ‘cigarette-paper; appearance

• Urethral prolapse= females 2-10 years, ‘vaginal’ bleeding with a dusky red or purplish annual mass between the labia majora
BLEEDING IN INFANTS AND GIRLS

- Precocious puberty=vaginal bleeding <7 of age warrants evaluation
- Coagulation disorders= von Willebrand’s, Factor VIII deficiency, etc.
- Hypothyroidism= may produce premature menstruation in association with growth delay, premature thelarche, galactorrhea and ovarian cysts.
- Hemangiomas and papillomas= intravaginal hemangiomas can produce bleeding in infancy or childhood
- Genital warts= bleeding occurs when warts are located on the mucosal surface of the introitus or inside the hymenal ring. Acquired by vertical transmission (birth through infected lower genital tract), nonabusive contact or sexual contact
- Estrogen exposure= vaginal bleeding associated with exogenous estrogen (OCP’s, etc)
- Female genital mutilation=hemorrhage/bleeding is a known complication of this practice
- Embryonal rhabdomyosarcoma and endodermal sinus tumores= associated with vaginal bleeding and abdominal mass; highly malignant skeletal muscle malignancy, found in the upper vaginal vault, presents with vaginal bleeding and passage of ‘grape-like’ masses
- Vulvar and vaginal trauma= blunt perineal trauma, motor vehicle accidents, playground, pools, and bicycle accidents
- Sexual abuse…..
Color Figure 15–4. Urethral prolapse in a pre-pubertal girl.
Color Figure 15–6. Straddle injury to the vulva resulted when a girl fell on the middle bar of a boys’ bicycle. The hymen was spared in this case.
Color Figure 33–9. Impalement injury. This young girl leapt into a swimming pool and impaled herself on a broom handle. The entry wound is seen here, just beneath the introitus; the exit wound was in the rectum.
ABNORMAL UTERINE BLEEDING
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