

PALM-COEIN Classification System for Abnormal Uterine Bleeding: Implications on Clinical Practice LTC Elizabeth Nutter, CNM 1115 -1215 (ET) 23 January 2020





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At the conclusion of this activity, participants will be able to:

- 1. Define abnormal uterine bleeding
- Describe the Polyp, Adenomyosis, Leiomyoma, Malignancy, Coagulopathy, Ovulatory dysfunction, Endometrial, latrogenic, and Not otherwise classified (PALM-COEIN) classification system
- 3. Distinguish structural etiologies of abnormal uterine bleeding from non-structural etiologies
- 4. Discuss guidelines for evaluation and management of abnormal uterine bleeding in the nongravid women of reproductive age utilizing the PALM-COEIN classification system



Abnormal uterine bleeding (AUB) **Replaces** *dysfunctional uterine bleeding* Alteration in the volume, pattern, or duration of menstrual blood flow ■ 30% of women experience abnormal uterine bleeding during their lifetime Most common reason for gynecologic referral □ Most common in the years prior to menopause

Abnormal Uterine Bleeding



Impacts Quality of life Productivity Health care use Health care costs



Indiatimes.com



Look at the previous six months cycles
 Evaluate four components

 Frequency
 Duration
 Volume
 Intermenstrual bleeding

Normal Frequency



- Regular and reasonably predictable intervals
- Cycle length
 - Days from start (day 1) of menses until the start (day 1) of the next menses
- Expect an episode of menstrual bleeding every 24 to 38 days
 - □ 14 to 21 days in the *follicular phase*
 - **1**4 days in the *luteal phase*



■ Adolescence menstrual cycles are often irregular

- □60-80% of cycles are 21-24 days long by the third year after menarche
- Little cycle variability among women between 20-40 years
- □ Significantly more cycle variability
 - 5-7 years after menarche
 - 10 years before menopause

Normal Duration

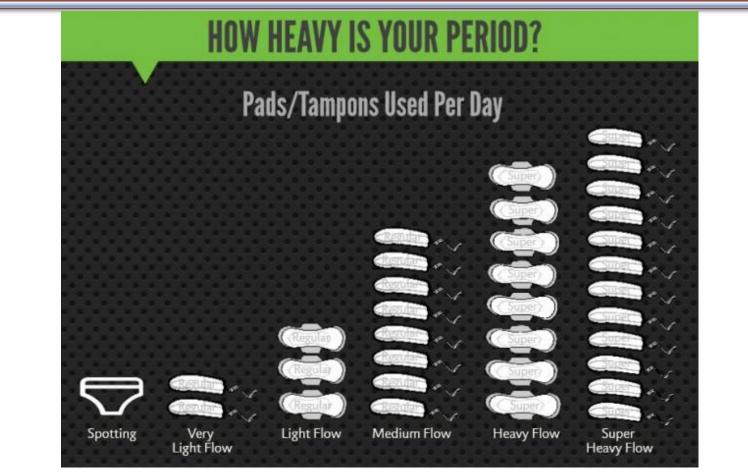


Number of bleeding days in a single menstrual period

- Normal duration up to eight days
- Average cycle duration 4-8 days

Normal Volume





www.bepreparedperiod.com



Acute AUB

- Chronic AUB
 - □ Irregular menstrual bleeding
 - Disturbances
 - frequency
 - duration
 - volume



Ada Love



■ A single episode of heavy bleeding

□ In a women of reproductive age

□ Who is not pregnancy

With a sufficient quantity of blood loss to require immediate intervention to prevent further blood loss

Chronic AUB Defined



- Bleeding from the uterine corpus
 - Abnormal in volume, regularity, and/or timing
 - □ Has been present for 4-6 months

■ Chronic AUB replaces

- Menometrorrhagia
- Menorrhagia
- Further classified into disturbances of
 - □ Frequency
 - Duration
 - Volume



Due to changes in the follicular phase Frequent uterine bleeding **Cycle starts more frequently than every** 24 days in a 90 day time frame Infrequent uterine bleeding Cycle starts less often than every 38 days in 90 day time frame □*Infrequent uterine bleeding* replaces oligomenorrhea

Disturbances of Frequency



Amenorrhea

□ No uterine bleeding for 180 days

Primary amenorrhea

⊳ No menarche by age 16

Secondary amenorrhea

Previously menstruating woman with no menstrual cycle for 90 days of longer

Duration of the period of amenorrhea should be specified

□ 2-5% women of childbearing age in the United States



Prolonged menstrual bleeding

Duration consistently more than 8 daysNo consensus on the lower limit of normal



■ MOST common AUB presentation

Heavy menstrual bleeding

□Subjectively defined

 Excessive blood loss that interferes with physical, emotional, social, and material quality of life

Objectively defined

 Drop in hemoglobin or in the number of menstrual products used (tampons and or pads) per day



■ Intermenstrual bleeding (IMB)

- Uterine bleeding that occurs between regular menstrual cycles
- 🛛 May be
 - Light flow
 - Short duration
 - Occurring between menstrual periods
 - Occur during or following sexual intercourse
 - Cyclical, with predictable bleeding
 - Acyclical, occurring at random times between menses

□ Intermenstrual bleeding replaces metrorrhagia

Cyclic Midcycle IMB



Cyclic midcycle intermenstrual bleeding

- □Often light and short
- Consistently occurring between regular menstrual periods
- □ Usually periovulatory bleeding
- Considered physiologic normal
- Associated with the physiologic nadir in circulating estradiol levels at midcycle
- Occurs in 1-2% of women



Cyclic premenstrual or postmenstrual intermenstrual bleeding

- Occurs during the follicular phase or luteal phase
- □Typically presents as very light bleeding
- Bleeding for one or more days
- □ Indicative of
 - Luteal phase defect (late cycle bleeding)
 - Endometriosis
 - Endometrial polyps
 - Other structural lesions of the genital tract





■ Acyclic intermenstrual bleeding

- □Not cyclical or predictable
- □Associated with benign lesions
 - Chronic cervicitis
 - Polyps
 - Cervical cancer
 - Endometrial cancer



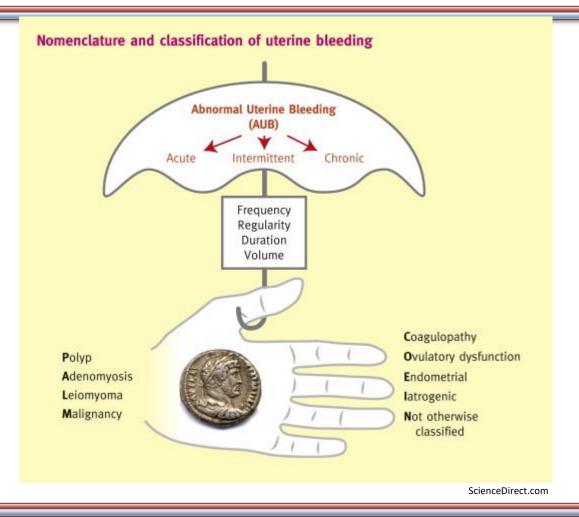


- Are you using the PALM-COEIN classification system currently in your clinical practice to help you evaluate abnormal uterine bleeding?
 - **Y**es

No

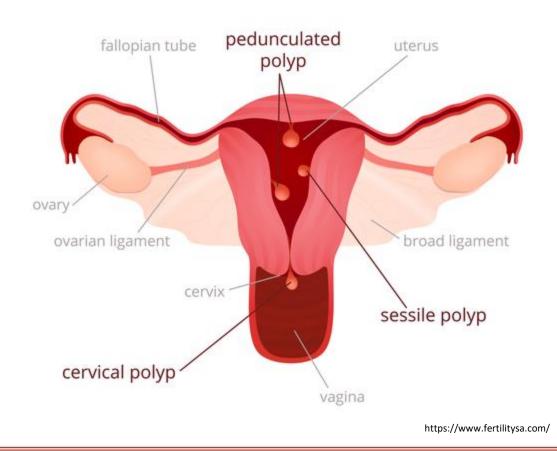
PALM-COEIN Classification System





Polyps (AUB-P)







- AUB is the most common presenting symptom
- Occurs in 64-88% of women with polyps
- Intermenstrual bleeding is the most frequent symptom in premenopausal women with polyps
- Volume of bleeding is usually small (spotting)
- Some women experience heavier bleeding between menstrual cycles

Polyps



Risk factors

Increased levels endogenous or exogenous estrogen

Tamoxifen

- Develop 2-36 % of postmenopausal
- Polyps may be large (>2 cm) and multiple

Obesity

■ BMI ≥30

Polyps



Pathogenesis

Endometrial hyperplasia

Overexpression of endometrial aromatase

Gene mutations

Epidemiology

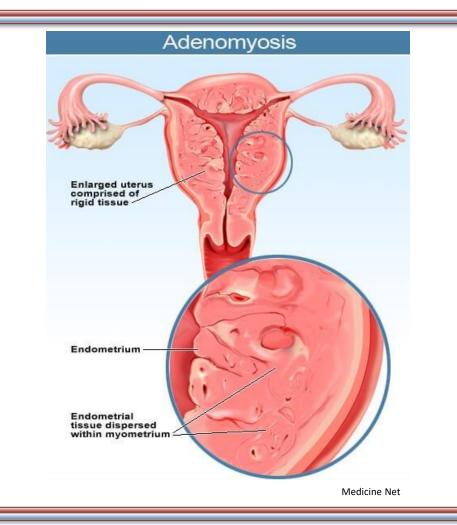
□ Rare among adolescents

□ Prevalence appears to rise with increasing age

□ Highest in premenopausal

Adenomyosis (AUB-A)







Dysmenorrhea

Heavy menstrual bleeding

□ Approximately 60% of women with adenomyosis

Chronic pelvic pain may also occur

- Symptoms develop between 40 and 50 years
- Approximately 1/3 of women are asymptomatic

Adenomyosis



Epidemiology

- □ Affects 20 percent of women
- Epidemiology of the disease is limited
- □ More common in parous women
- □ Prior uterine surgery may also be a risk

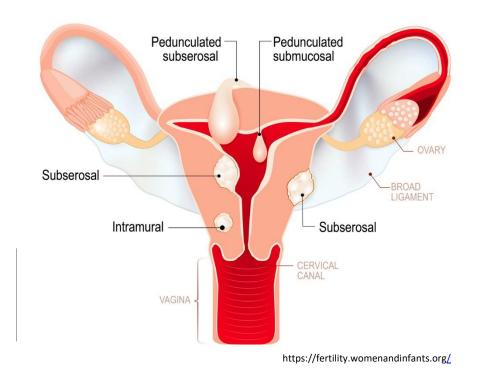
Pathogenesis

- Unknown
- Theory
 - Develops from endomyometrial invasion of the endometrium

Leiomyoma (AUB-L)



Types of uterine fibroids





Heavy or prolonged menstrual bleeding

□ Most common fibroid symptom

- Bulk-related symptoms
 - Enlarged and irregularly shaped uterus
 - Causes symptoms due to pressure from at particular locations
 - Pelvic pressure or pain
 - Back pain
 - Urinary tract or bowel issues
 - Painful menses

□ Heavy menstrual flow and/or passage of clots



- Majority are small and asymptomatic
- Symptoms are related to the number, size, and location

□ Heavy menstrual bleeding

Increasing abdominal girth

□ Sense of abdominal fullness similar to pregnancy

- □ AUB and menstrual cramps are the most common symptoms occurring in about 26 to 29% of women
- Symptoms are classified into categories
 Heavy or prolonged menstrual bleeding
 Bulk-related symptoms, such as pelvic pressure and pain
 Painful menses

Leiomyoma



Prevalence

- □ Increases with age during the reproductive years
- Occasionally noted in adolescents
- Most women have shrinkage of leiomyoma's after menopause

Leiomyoma Risk Factors



 2-3 greater risk in black women

Parity

Nullipara increases risk

Early menarche

<10 years old</p>

Obesity

Increasing BMI

Diet

- Red meat (1.7-fold)
- Ham (1.3-fold)

Genetics

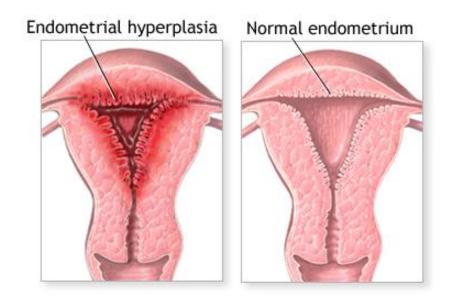
 Specific susceptibility genes

Other factors

Hypertension

Endometrial Hyperplasia (AUB-M)





*ADAM. https://medlineplus.gov/ency/imagepages/17087.htm



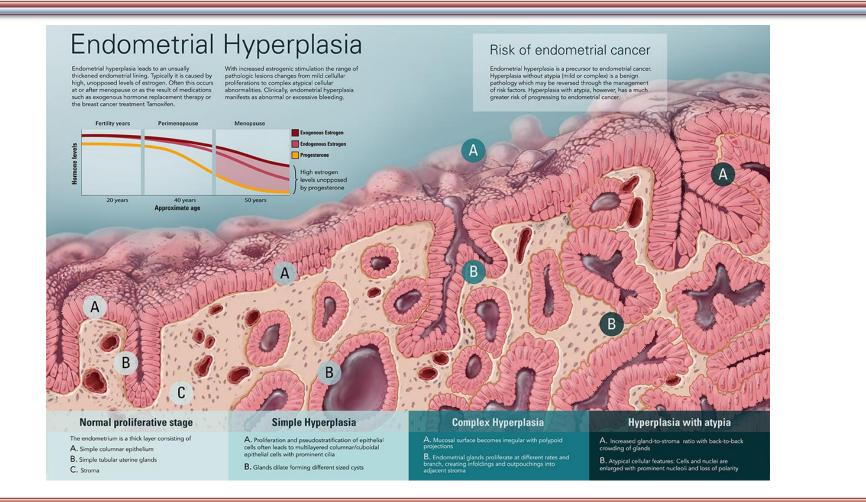


AUB

Abnormal findings on cervical cytology

WHO Hyperplasia Classification







Indicator of risk of endometrial carcinoma Presence of nuclear atypia Cancer risk based on histologic category □Simple hyperplasia without atypia 1% Complex hyperplasia without atypia 3% □Simple atypical hyperplasia 8% □Complex atypical hyperplasia 29%

Endometrial Hyperplasia



Epidemiology

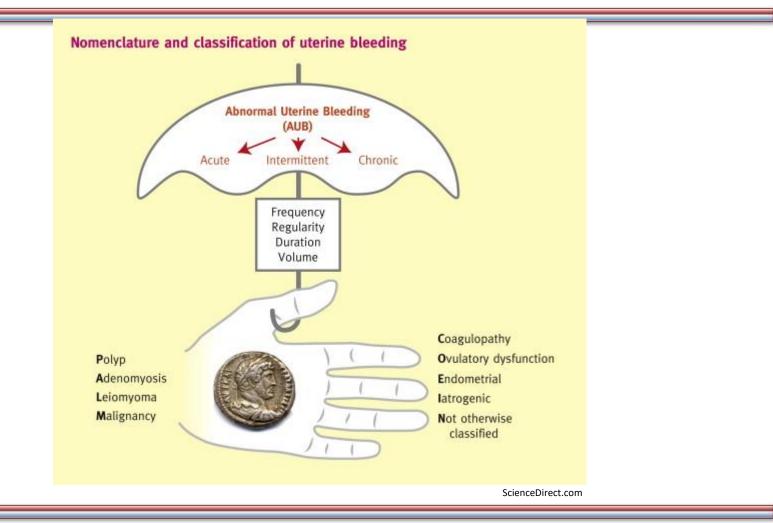
- □ Incidence 133 per 100,000 women
- □ Rare <30 years
- □ Simple and complex hyperplasia without atypia
 - Women age 50 to 54
- Atypical hyperplasia
 - Women age 60 to 64

Risk factors

- Exposure to continuous estrogen unopposed by a progestin
- Lynch syndrome (hereditary nonpolyposis colorectal cancer)

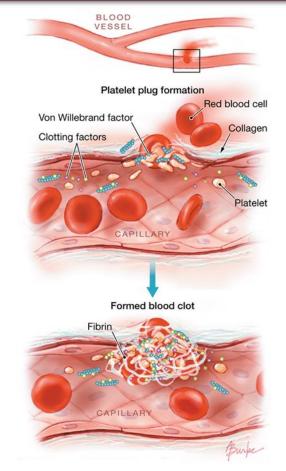
PALM-COEIN Classification System





Coagulopathy (AUB-C)





Global Treatment Services Pvt .Ltd



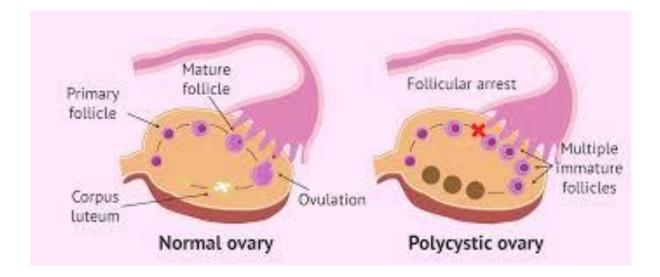
History of bruising, epistaxis, anemia
 Thrombocytopenia or myelosuppression caused by chemotherapy
 Heavy menstrual bleeding
 Common consequence of the use of anticoagulant drugs



■ 13% of women with *heavy menstrual bleeding* have biochemistry detectable systemic disorders of hemostasis Most common bleeding disorder in women □ Von Willebrand disease affects up to 1% of the U.S. population An autosomal dominant disorder Caused by a defect in or deficiency of von Willebrand factor Women may also have mild hemophilia ("symptomatic carriers") Carrying the gene and also exhibit symptoms Hemophilia A or factor VIII deficiency Hemophilia B or factor IX deficiency Rare factor disorders factor I, II, VI, VII, XI and XIII deficiency

Ovulatory Dysfunction (AUB-O)





https://www.invitra.com/en/polycystic-ovary-syndrome/

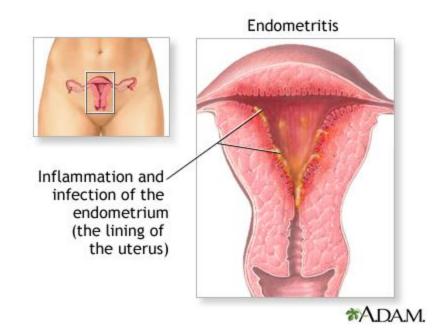


Conditions associated with ovulatory dysfunction

- Polycystic ovary syndrome
- **Hypothyroidism**
- □ Hyperprolactinemia
- Mental stress
- Obesity
- Anorexia
- Uveight loss
- Extreme exercise such as elite athletes

Endometrial (AUB-E)





Epidemiology AUB-E



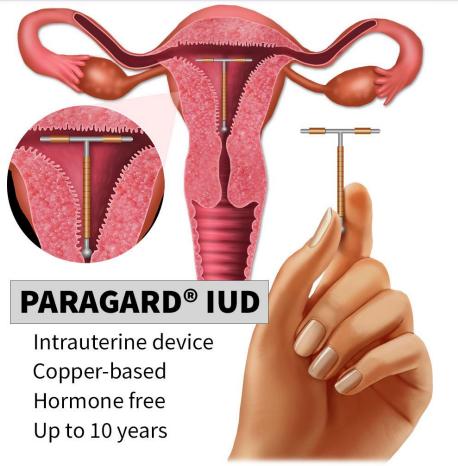
Heavy menstrual bleeding

□ Issue with mechanisms regulating the endometrial stability

- Intermenstrual bleeding or prolonged bleeding
 - Endometrial inflammation
 - □ Infection (particularly Chlamydia)
 - Abnormalities in endometrial vasculogenesis

latrogenic (AUB-I)





https://www.gblawyers.com/paragard-iud-lawsuit/



- Systemically administered single-agent or combination gonadal steroids
 - Impact the control of ovarian steroidogenesis via effects on the Hypothalamic-Pituitary-Ovarian axis (HPO axis)
 - Exert a direct effect on the endometrium
- Continuous cycling or progestin-only agents
 - Any bleeding is considered to be unscheduled and classified as AUB-I

Epidemiology AUB-I



Compliance issues gonadal steroids Missed, delayed, or erratic use of pills, transdermal patches, or vaginal rings Anticonvulsants and antibiotics Rifampin (Rifadin) and Griseofulvin (Gris-PEG) Cigarette smoking Levonorgestrel-releasing intrauterine system (LNG-IUS) Tricyclic antidepressants Amitriptyline (Elavil) Nortriptyline (Aventyl) Phenothiazines



- Unexplained reason or poorly understood reason for endometrial instability
 - □Arteriovenous malformations
 - Chronic endometriosis
 - □ Myometrial hypertrophy
 - Other disorders defined by only biochemical markers
 - □Any future entities not yet classified

General Evaluation AUB



General assessment

- □ Rule out undiagnosed pregnancy
- Ensure blood is emanating from the cervical canal, rather than another location
- Women with both acute and chronic AUB should be evaluated for anemia
 - Complete Blood Count (CBC)
- Once the bleeding has been confirmed
 - Proceed in a systematic fashion addressing each of the components of the PALM-COEIN classification system

General Evaluation AUB



Diagnosis of Chronic AUB

- Requires experience of 1 or a combination of unpredictability, excessive duration, abnormal volume, or abnormal frequency of menses for at least the previous 3 months
- □ Structured history to determine
 - Ovulatory function
 - Potential related medical disorders
 - Medications
 - Lifestyle factors that might contribute to AUB
- □ Understanding the future fertility desires of the woman
- □ Ancillary investigations include
 - Hemoglobin and/or a hematocrit assessment
 - Appropriate tests for features that could contribute to an ovulatory disorder (thyroid function, prolactin, and serum androgens)

General Evaluation AUB



- Initial positive screen screening AUB-C comprises
 - □ Heavy menstrual bleeding since menarche
 - One of the following:
 - Postpartum hemorrhage
 - Surgical-related bleeding
 - Bleeding associated with dental work
 - Two or more of the following symptoms:
 - Bruising 1–2 times per month
 - Epistaxis 1–2 times per month
 - Frequent gum bleeding
 - Family history of bleeding symptoms



■ A positive screen further testing is necessary

Often following consultation under the direction of a hematologist

Such tests may include

Assays for von Willebrand factor

Screening for AUB-O



Ovulation

□ Predictable cyclic menses every 22–35 days

Anovulation

Bleeding irregular in timing and flow, and often interspersed with episodes of amenorrhea

Diagnostic tests

- Timed to the best estimate of mid-luteal phase
 - □ Measurement of serum progesterone

Endometrial biopsy

Uterine Evaluation



Guided by history and other elements of the clinical situation

□ Patient age

□ Presence of an apparent chronic ovulatory disorder

Presence of other risk factors for endometrial hyperplasia or malignancy

For those at increased risk

Endometrial biopsy is probably warranted

□ If there is a risk of structural anomaly

"Screening" transvaginal ultrasound (TVUS) examination



- Endometrial biopsy is not required for AUB
- Endometrial biopsy is based on risk of atypical hyperplasia or carcinoma
 - Age >45 years
 - Personal and genetic risk factors

▷ Family history nonpolyposis colorectal cancer syndrome

- Consider Sexually Transmitted Infection (STI) evaluation in symptomatic patients
- Persistent AUB that is unexplained or not adequately treated

▷ In association with hysteroscopic evaluation of the uterine cavity

Uterine Evaluation



■ For those at increased risk

Endometrial biopsy

□ If there is a risk of structural anomaly

- Transvaginal ultrasound (TVUS) examination
 - Abnormal TVUS examination or endometrial sampling has not provided an adequate specimen
 - Hysteroscopy and saline infusion sonography (SIS)

□ MRI may be of value, if available



- Transvaginal ultrasound
 - performed first or early in the course of the investigation
- Negative ultrasound
 - Endometrial cavity may presumptively be considered normal
- Positive ultrasound consult with specialist
 Sonohysteroscopy and hysterosonography or hysteroscopy

Evaluation of Endometrial Cavity Structures



■ With the PALM-COEIN classification

- P (for endometrial and endocervical polyps) is confirmed only with documentation of 1 or more clearly defined polyps, generally with either SIS or hysteroscopy
- Usually, a patient may be categorized with 1 or more submucosal leiomyomas (AUB-LSM) with either SIS or hysteroscopy

Myometrial Assessment



Leiomyoma assessed

- TVUS and transabdominal ultrasound
- Negative ultrasound plus either hysteroscopy or SIS fail to identify leiomyomas patient would be classified as L0

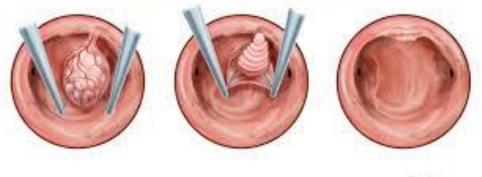
Positive ultrasound lesion leads to an L1 assignment

- Place consult for specialist for the secondary and tertiary subclassification
- Perform some combination of TVUS, SIS, hysteroscopy, and MRI

Treatment AUB-P



Hysteroscopic Polypectomy





https://www.angelsfertility.com/services/hysteroscopic-polypectomy/



- Nonsteroidal Anti-inflammatory Drugs (NSAIDs)
- Levonorgestrel-releasing intrauterine device (LNG-IUD)
 - Generational Mirena, Skyla, Liletta
- Conservative excision if focal
- Uterine artery embolization or endometrial ablation if the adenomyosis depth is less than 2.5 mm
- Extensive disease
 - □ Hysterectomy is recommended

Treatment AUB-L



Asymptomatic

No treatment is required

- Symptomatic
 - GnRH agonists Leuprolide (Lupron)
 - □ Mifepristone (Mifeprex/RU486)
 - □ Ulipristal acetate (Ella)
 - □ Aromatase inhibitors
 - Uterine artery embolization
 - □ Hysterectomy
 - Myomectomy

Treatment AUB-M



■ Preserve fertility

High-dose progesterone treatment can be utilized with close follow-up

Hysterectomy is recommended due to the high incidence of progression to endometrial cancer

Treatment AUB-O



□ Treatment Goals = Prevention

- 🛛 Anemia
- Endometrial intraepithelial neoplasia
- Endometrial cancer
- Progestins
- Combined hormonal contraception
- Medroxyprogesterone (Provera)
- Injectable medroxyprogesterone acetate (Depo-Provera)
- Micronized progesterone (Prometrium)
- Levonorgestrel-releasing intrauterine device (LNG-IUD)

Treatment AUB-E





- Tranexamic acid
- Combined hormonal contraception
- Levonorgestrel-releasing intrauterine device
- Menstrual ablation

Treatment AUB-I & AUB-N



■ *latrogenic:* AUB-I

Bleeding usually resolves when the causative medication has been discontinued

■ Not Classified: AUB-N

The treatment goal for women with AUB-N is to control AUB with previously mentioned therapies





- Treatment is based on
 - □ Specific etiology of AUB
 - A woman's reproductive wishes
 - Prevention of morbidity from AUB
- Use of the PALM-COEIN system helps
 - □ Eliminate confusion about the etiology of AUB
 - Provide effective communication of that diagnosis to other providers
 - □ Result in better coordination of care
 - Facilitate research on the etiology and treatment of this condition and the prediction of endometrial cancer

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