(Abnormal Uterine Bleeding)

6th year Seminar

- Supervised By :

Dr. Omar aldabbas

Presented by :

Muhannad Marrar

Raneem Rababah

Walid Nabeel

Abdulrahman Aljafary

Joud Zeitoon

References :

- Ten Teachers Gyn. 20th Edition
- UpToDate

Definition

- ❑ AUB :Uterine bleeding of **abnormal** quantity , duration, or time that affects females of **all ages ..**
- ❑ **What do we mean by " abnormal " ?**
- **Any deviation** in normal character of menstruation **women of reproductive age** .
- **Any postmenopausal bleeding**
- ✓ Once a woman who is not taking hormone therapy enters menopause and the menstrual cycles have ended , any uterine bleeding is considered abnormal !!

Normal cycle

- **Frequency**: 24-38 day (Average = 28 d)
- **Menses**:

- **Duration** : <8d (Average = 5 d)
- **Volume** : 20-80 ml (subjective assessment)

- Normal **Cycle-to-cycle Variation**
- **Menopause onset** : 45 -55 year(average 51y)

Normal menstruation parameters

Parameter	Normal	Abnormal
Frequency	≥24 and ≤38 days	Absent (no bleeding): amenorrhea
		Frequent (<24 days)
		Infrequent (>38 days)
Duration	≤8 days	Prolonged (>8 days)
Regularity	Regular: shortest to longest cycle variation: ≤7 to 9 days*	Irregular: shortest to longest cycle variation: ≥10 days
Flow volume (patient determined)	Patient considers normal	Patient considers light
		Patient considers heavy
Intermenstrual bleeding (bleeding between cyclically regular onset of menses)	None	Random
		Cyclic (predictable): ▪ Early cycle ▪ Mid cycle ▪ Late cycle
Unscheduled bleeding on progestin±estrogen gonadal steroids (contraceptive pills, rings, patches, IUDs, or injections)	Not applicable for patients not on gonadal steroid medication	Present
	None (for patients on gonadal steroid medication)	

Old terms to describe the cycle disorders

- **Frequency** (length of cycle) :
- Polymenorrhoea : (<21 d) , at regular intervals
- Oligomenorrhea : (>35 d) , at regular intervals
- **Amount** :
- Menorrhagia : Excessive (>80 ml) Volume or prolonged Duration of menses (> 7 days) , at regular intervals
- Hypomenorrhea

Metrorrhagia: Uterine bleeding at irregular intervals, particularly between the expected menstrual periods

➔ **Now** We describe the frequency as (Normal , frequent , infrequent) and the flow volume as (Normal , heavy , light) and the menses as (normal , prolonged) ..

➔ Metrorrhagia **Now** commonly called Intermenstrual bleeding ..

Polyp

Adenomyosis

Leiomyoma

Malignancy & hyperplasia

→ **Submucosal**

→ **O**ther

Coagulopathy

Ovulatory dysfunction

Endometrial

Iatrogenic

Not yet classified

FIGO classification of the causes of AUB

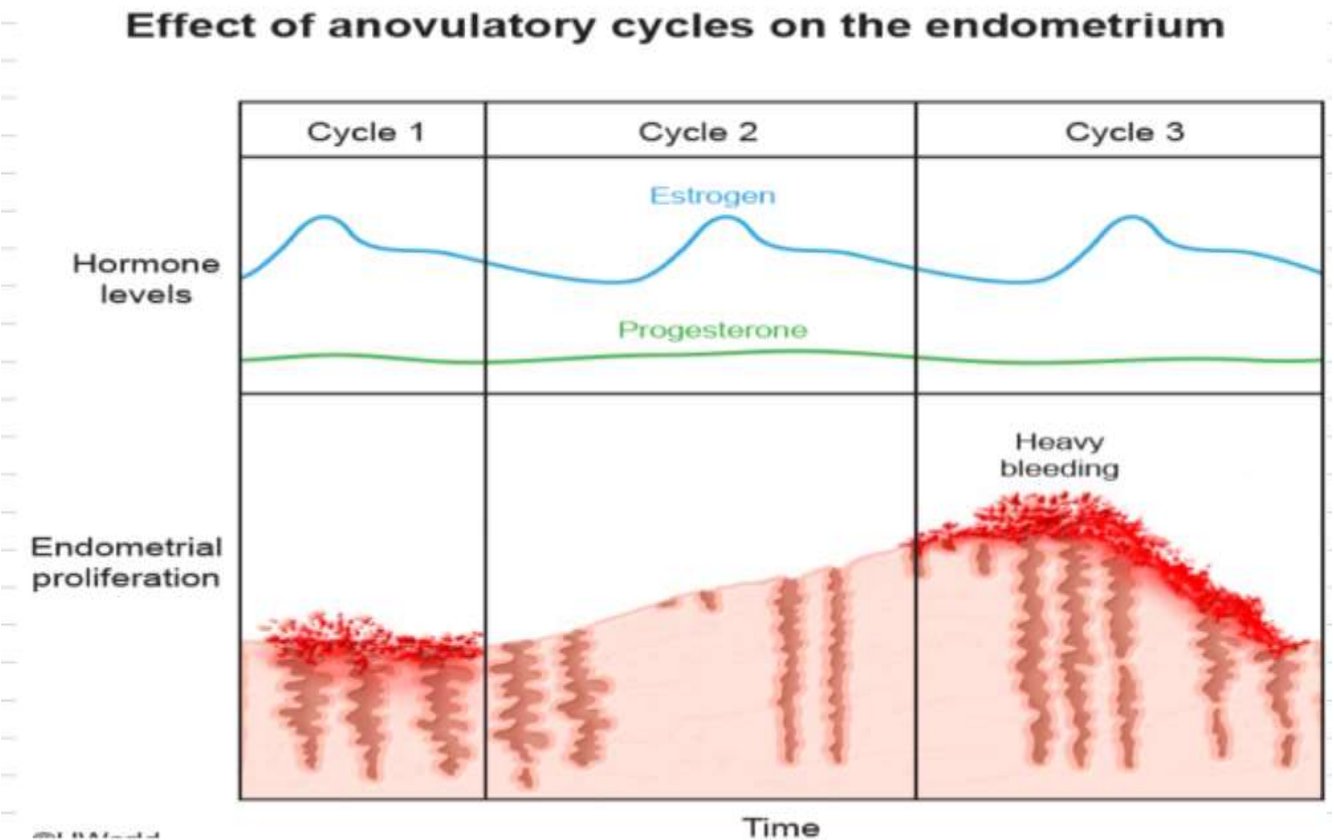
Structural	
P	Endometrial polyps, cervical polyps
A	Adenomyosis
L	Leiomyoma
M	Premalignancy (endometrial hyperplasia) Malignancy of the genital tract (cervical, endometrial, ovarian, vaginal, vulval, sarcoma of endometrium or myometrium)
Non-structural	
C	Systemic coagulopathy, e.g., thrombocytopenia, von Willebrand's disease, leukemia, warfarin
O	Disorders of ovulatory function, e.g., polycystic ovary syndrome, congenital adrenal hyperplasia, hypothyroidism, Cushing's disease, hyperprolactinemia
E	Primary endometrial disorders, e.g., disturbances of local endometrial hemostasis, vasculogenesis or inflammatory response (chronic endometritis)
I	Iatrogenic causes, e.g., exogenous sex steroid administration (combined oral contraceptives, progestins, tamoxifen intrauterine contraceptive device, traumatic uterine perforation
N	Generally rare causes, e.g., arteriovenous malformations, myometrial hypertrophy, sex steroid secreting ovarian neoplasm, chronic renal or hepatic disease, endometriosis

Notes

- **HMB :** often seen with structural lesion & coagulopathy.
- **Prolonged menses :** often, but not always, associated with heavy menstrual bleeding
- **IMB :** often seen with polyps or cervical causes .
- **PCB**: Often associated with cervical abnormalities.

Causes of heavy menstrual bleeding	
Diagnosis	**Clinical features**
Adenomyosis	• Heavy, regular menses • Dysmenorrhea, pelvic pain • Uniformly enlarged (globular), tender uterus
Endometrial cancer/hyperplasia	• Irregular, intermenstrual, heavy, or postmenopausal bleeding • History of unopposed estrogen (eg, obesity, nulliparity, chronic anovulation) • Nontender uterus (± enlarged)
Endometriosis	• Uncommon cause of heavy menses • Dysmenorrhea, pelvic pain, dyspareunia • Fixed uterus, adnexal mass (endometrioma), rectovaginal nodularity
Uterine leiomyomas (fibroids)	• Heavy, regular menses • Bulk symptoms (eg, pelvic pressure/pain, constipation) • Irregularly enlarged uterus with uneven contour
Coagulopathy (eg, von Willebrand disease)	• Heavy, regular menses • Bruising, mucocutaneous bleeding (eg, gums) • Normal uterus

Irregular bleeding— Irregular uterine bleeding is most commonly associated with ovulatory dysfunction (AUB-O) and typically occurs at the extremes of reproductive age (ie, postmenarchal, perimenopausal) ,Bleeding is typically characterized by phases of no bleeding that may last for two or more months and other phases with either spotting or episodes of heavy bleeding. Molimina symptoms (eg, breast tenderness, bloating, fatigue) are typically absent.



❑**PMB**: Bleeding more than 1 year after cessation of periods.

We consider it **Malignancy Until proven otherwise** ..(although just 10% of PMB is due to malignancy)

Causes of vaginal bleeding in postmenopausal women	
Polyps	30%
Submucosal fibroids	20%
Endometrial atrophy	30%
Hyperplasia	8–15%
Endometrial carcinoma	8–10%
Ovarian, tubal, cervical malignancy	2%

NOTES

- AUB can be caused by structural uterine pathology or Nonuterine causes >> **PALM – COIEN classification**
- may cause anemia and impair quality of life.

❑

- **bleeding of endometrial origin**’ or "**Anovulatory uterine bleeding**" is the preferred term for Heavy noncyclic uterine bleeding unrelated to structural lesions of the uterus, systemic disease, or sexually transmitted infection ..

General Approach

❑ History :

❑ **Hemodynamic stability should be ascertained first, with resuscitative measures performed in unstable patients with acute AUB, before obtaining a thorough history. In stabilized patients, the clinician should obtain a detailed history :**

1. General information:

Age : help to narrow differential diagnosis

Pregnancy status : essential to rule out

Pregnancy-related causes

2. Bleeding Characteristics :

Duration and onset: differentiate acute and chronic

Pattern of bleeding:

1. Regular but heavy bleeding
2. Irregular bleeding
3. Intermenstrual bleeding
4. Postcoital bleeding

Severity of bleeding:

Soaking pads every 1-2 hours, passing large clots →

Suggests heavy menstrual bleeding (coagulopathy, fibroids, maligna

Associated symptoms:

Pelvic pain or pressure

Symptoms of anemia (fatigue, pallor, dizziness, tachycardia, dyspnea

Menstrual irregularities, weight changes, hirsutism, acne

Dysmenorrhea, dyspareunia, infertility

Galactorrhea, heat or cold intolerance, hot flushes

Age Group	Most Common Causes
Adolescents (10–18 years)	- Anovulation (immature HPO axis) - Coagulopathy (Von Willebrand disease) - Pregnancy-related (miscarriage, ectopic)
Reproductive Age (19–40 years)	- Pregnancy-related bleeding - Fibroids, polyps, adenomyosis - Ovulatory dysfunction (PCOS, thyroid disorders) - Iatrogenic (contraceptives, IUDs, anticoagulants)
Perimenopausal (40–50 years)	- Anovulatory bleeding (irregular cycles) - Endometrial hyperplasia - Fibroids, adenomyosis
Postmenopausal (>50 years)	- Endometrial cancer - Atrophic endometrium/vaginitis - Polyps

3. Menstrual history :

1. Age of menarche
2. Last menstrual period
3. Menses frequency, regularity, duration, the volume of flow
4. Menopausal status
5. Current contraception
6. History of abnormal PAP smear

4. past obstetrics history

Including numbers of pregnancy and mode of delivery

Don’t forget to ask the patient about her fertility desire in future

5. Medical and Family History :

1. Personal or family history of :

Easy bruising, prolonged bleeding, or previous postpartum hemorrhage → Raises suspicion for coagulopathy (e.g., Von Willebrand disease, platelet disorders) , personal or family history of malignancy.

2. Use of medications

(e.g., anticoagulants, hormonal therapy, NSAIDs, IUDs)

3. History of thyroid, liver, or kidney disease,

These conditions can contribute to hormonal dysfunction and platelet abnormalities.

– Physical Examination

1. Vital signs, including blood pressure and body mass index (BMI)
2. Dermatologic indicators of anemia or of coagulopathies, eg, pallor, petechiae, and bruising
3. Abdominal exam to palpate for any pelvic or abdominal masses
4. Pelvic exam

Speculum and bimanual exams should be performed

5. Pap smear: rules out cervical carcinoma
6. Swabs for microbiologic testing: rule out cervicitis due to gonorrhea/chlamydial infection

❑ Investigation :

Laboratory tests :

- Pregnancy test -- **Pregnancy should be excluded** in all reproductive-age patients with AUB even in those who report use of contraception !!
- **Full blood count** (FBC) should be performed in **all women**
- **Thyroid function test :** Assess in patients with signs or symptoms of thyroid disease
- **Hormonal evaluation :** Specific hormonal tests (eg, prolactin, androgens, and estrogen) should be reserved for cases with clinical suspicion of endocrine dysfunction (eg, anovulation or hyperprolactinemia).
- **Bleeding disorders initial screening** **with Platelets count, pt and ptt**

Evaluation of patients, especially adolescent girls, who present with HMB and any of the following

The duration of menses was ≥7 days

A history of treatment of anemia

A family history of a diagnosed bleeding disorder

A history of excessive bleeding with tooth extraction, delivery or miscarriage, or surgery

should include an assessment for the presence of a bleeding disorder

Imaging studies:

1) Ultrasound (TVUS or TAUS)

The first-line modality for evaluating the uterus. It helps in identifying structural abnormalities such as fibroids, polyps, adenomyosis, and it allows for evaluation of endometrial thickenss

Note :

Normal endometrial thickness varies depending on the phase of the menstrual cycle:

Proliferative phase: 5-7 mm

Secretory phase: 7-14 mm

Postmenopausal women:

Typically <4mm (unless on hormone replacement therapy).

- **If >4 mm in postmenopause or >16 mm in premenopause consider biopsy**

2) Saline Infusion Sonohysterography (SIS)

3) MRI : more sensitive for detecting adenomyosis and leiomyoma

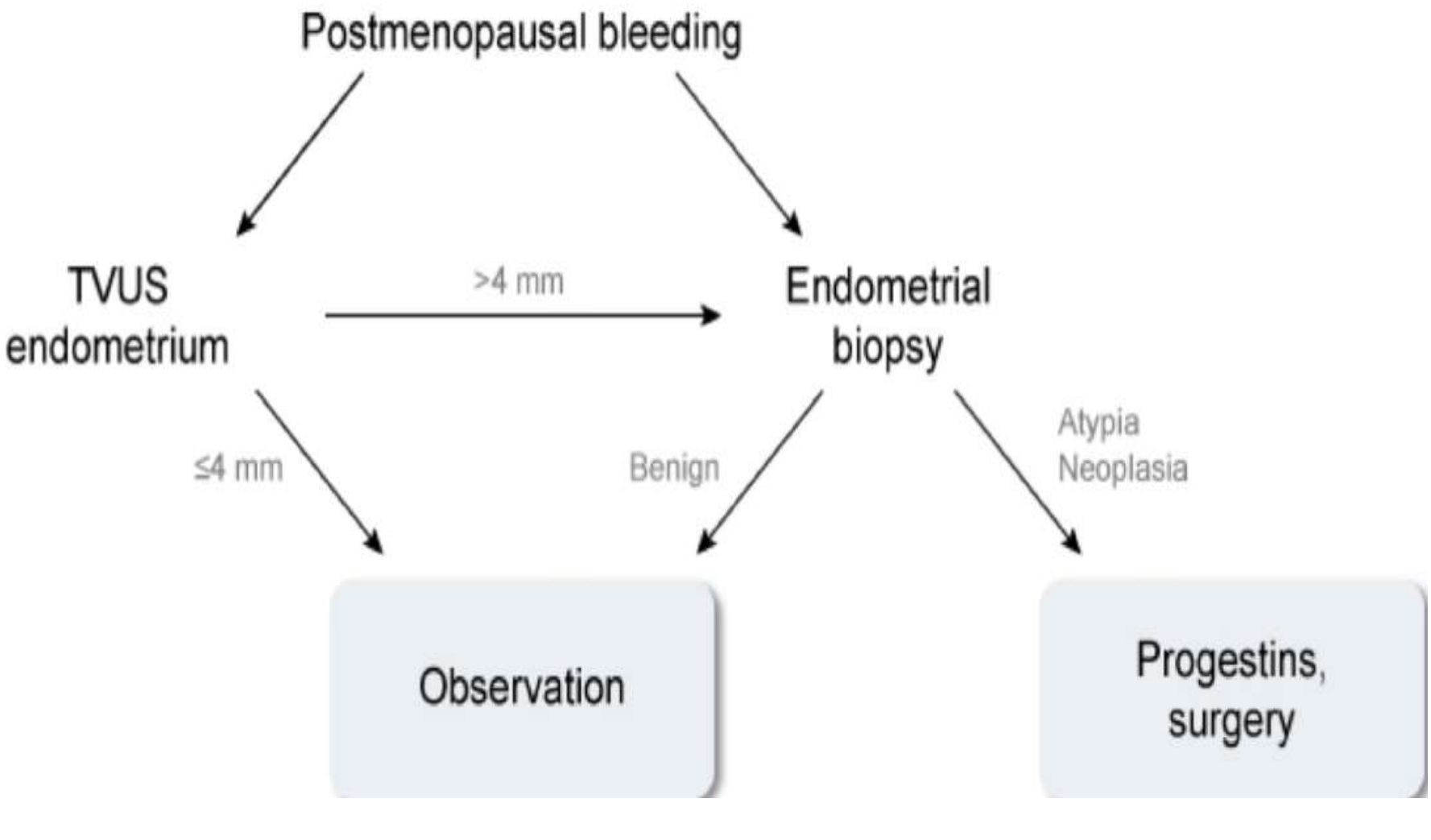
4) Hysteroscope :

May be both diagnostic and therapeutic

Removal of polyps

Resection of submucosal fibroids

Approach to postmenopausal bleeding



Note that >4 mm thickness doesn't rule in cancer it's just that if the endometrium thickness is <4 mm it's very unlikely to be cancer (<1%

Endometrial biopsy:

Indications vary by age group and the presence of risk factors.

1)Postmenopausal patients with any uterine bleeding and/or endometrial thickness ≥ 4 mm

2)All patients > 45 years old with frequent, heavy, and/or prolonged bleeding

3)Patients < 45 years old with frequent, heavy, and/or prolonged bleeding who are at high risk for endometrial cancer (risk factors include obesity, polycystic ovary syndrome, type 2 diabetes, tamoxifen therapy, Lynch syndrome) and/or have failed medical management

Endometrial biopsy indications	
Age ≥45	• Abnormal uterine bleeding • Postmenopausal bleeding
Age <45	Abnormal uterine bleeding PLUS: • Unopposed estrogen (obesity, anovulation) • Failed medical management • Lynch syndrome (hereditary nonpolyposis colorectal cancer)
Age ≥35	• Atypical glandular cells on Pap test

Polyps :

- Uterine polyps, also called endometrial polyps, are **small, soft growths on the inside of a woman's uterus**. They come from the tissue that lines the uterus, called the endometrium. They can range in size .
- Polyps can make heavy periods or bleeding between periods
- Polyps should be treated if they cause heavy bleeding during menstrual periods, or if they are suspected to be precancerous or cancerous.
- They should be **removed if they cause problems during pregnancy**, such as a miscarriage, or result in infertility in women who want to become pregnant

- **It is rare for uterine polyps to be cancerous**

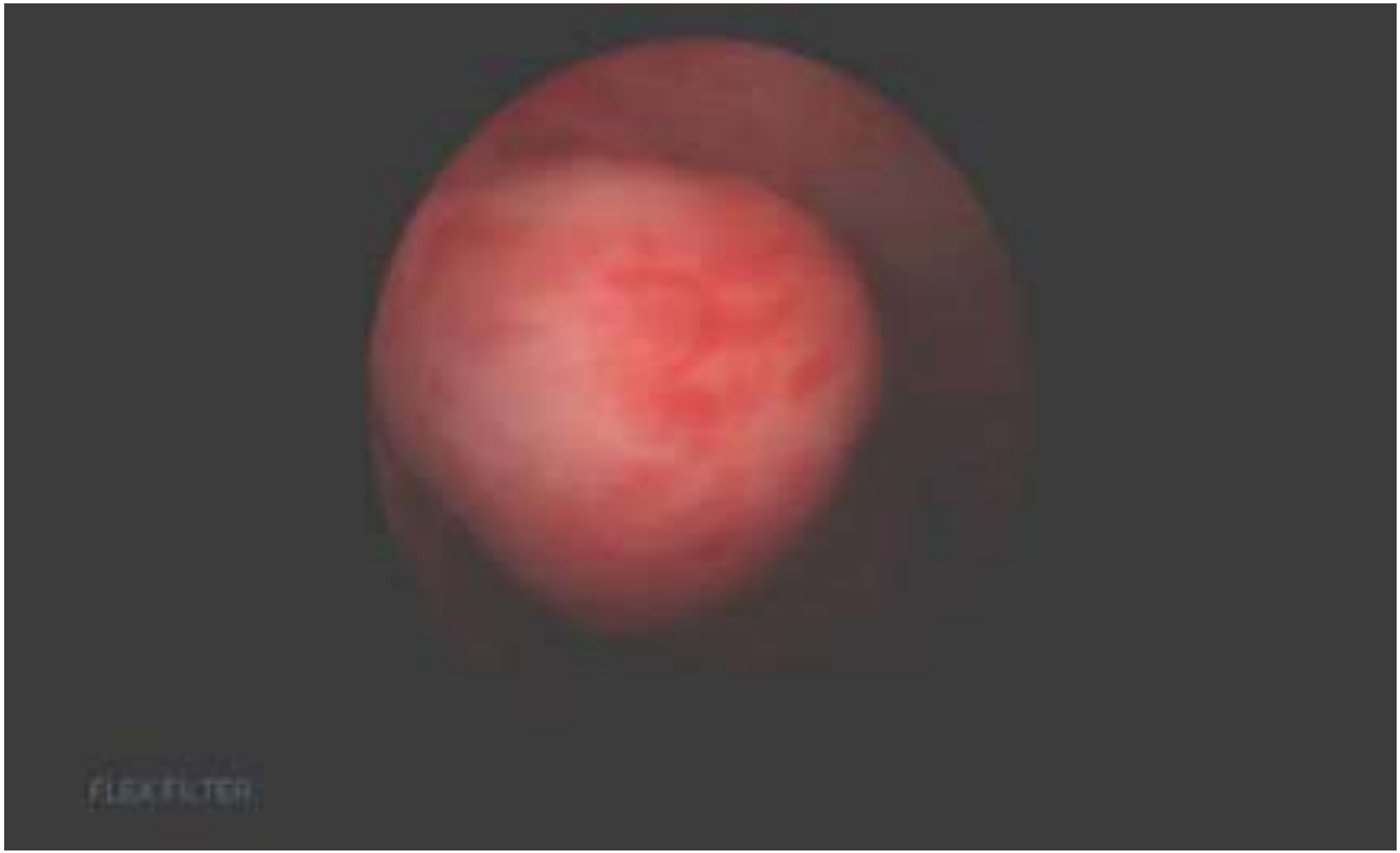
- Cervical polyps commonly occur during the reproductive years, especially after age 40 years. The etiology is unknown. Chronic inflammation of the cervical canal may play a role, as may hormonal factors, since endometrial hyperplasia and polyps coexist more frequently than one would expect by chance alone.

- The size is typically less than 3 cm in diameter; however, polyps large enough to fill the vagina

Polyps should be removed when symptomatic (eg, bleeding, excessive discharge), large (≥3 cm), or appearing atypical. Polypectomy can usually be accomplished by grasping the base of the polyp with forceps and twisting it off.

Malignancy is rarely found in a cervical polyp

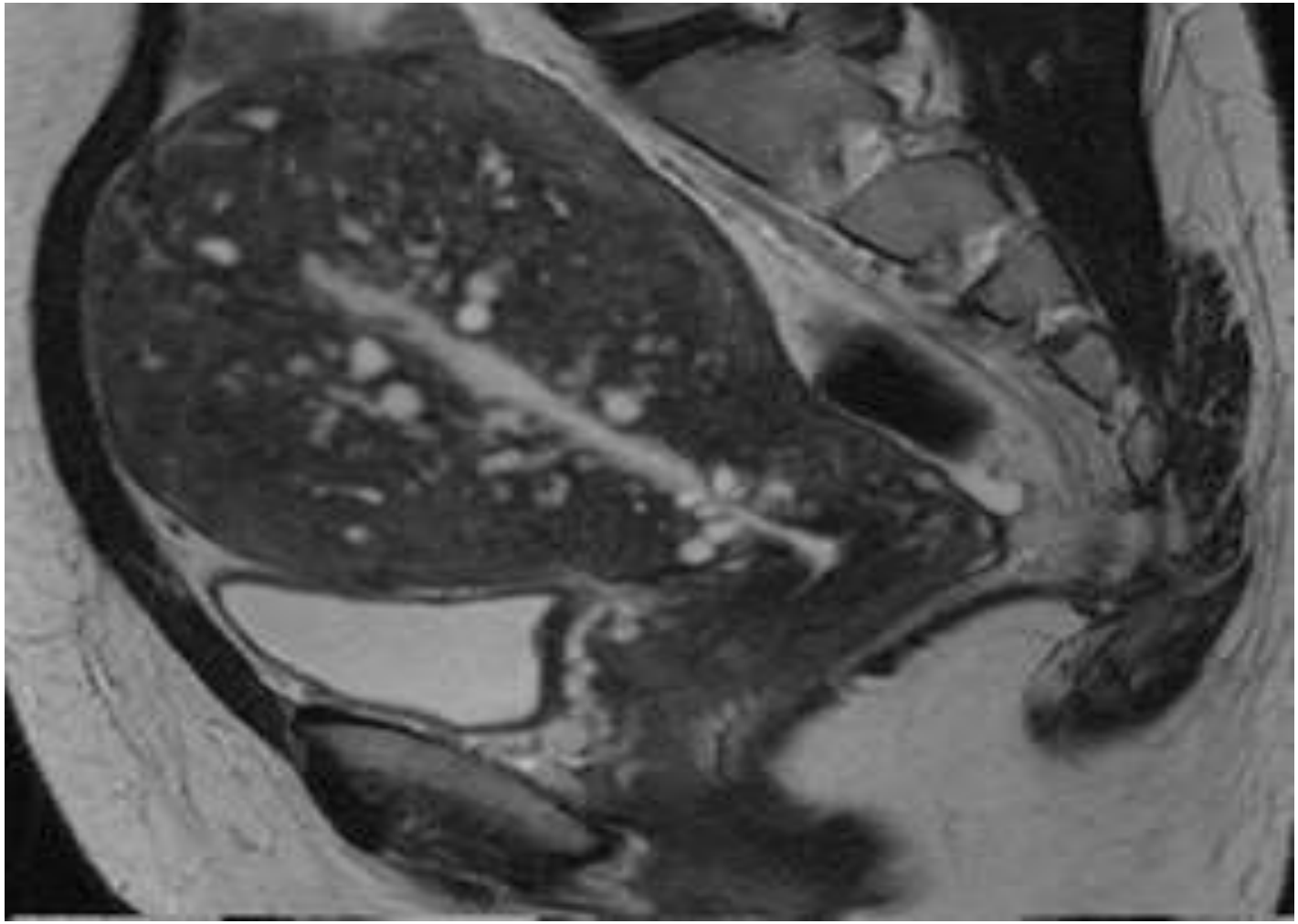
Endometrial polyp by office hysteroscopy



Uterine Adenomyosis

- Adenomyosis refers to a disorder in which endometrial glands and stroma are present within the uterine musculature.
- The ectopic endometrial tissue appears to induce hypertrophy and hyperplasia of the surrounding myometrium, which results in a diffusely enlarged uterus (often termed "globular" enlargement) analogous to the concentric enlargement of the pregnant uterus
- Just as endometriosis can be localized or diffuse, adenomyosis can be present diffusely throughout the myometrium, or confined to a discrete area .
- On gross inspection, the uterus with diffuse adenomyosis is uniformly enlarged and boggy, in contrast to the irregular and firm appearance of the fibroid uterus.
- Adenomyomas can clinically resemble leiomyomas.

Adenomyosis of the uterus by magnetic resonance imaging



EPIDEMIOLOGY AND RISK FACTORS

- The incidence of adenomyosis has not been determined accurately since the diagnosis can only be made with certainty by microscopic examination of the uterus, typically following hysterectomy.
- Generally estimated: 20 percent of women, Presenting age is around 42 years old.
- Adenomyosis appears to be more common in multipara than nulliparous women.
- Several studies have reported that prior uterine surgery may also be a risk factor for adenomyosis.

CLINICAL MANIFESTATIONS

- Heavy menstrual bleeding and painful menstruation are the major symptoms of adenomyosis, occurring in approximately 60 and 25 percent of women, respectively.
- Chronic pelvic pain may occur
- Approximately one-third of women are asymptomatic.
- Physical examination usually reveals diffuse uterine enlargement (often termed "globular" enlargement), generally not exceeding the size of a pregnant uterus at 12 weeks of gestation. However, some women have a normal sized uterus while others develop nodules (termed adenomyomas), which clinically resemble leiomyomas.
- There is no evidence that uterine adenomyosis affects the risk of spontaneous abortion or other obstetric outcomes

DIAGNOSIS

- A definitive diagnosis of adenomyosis can only be made from histological examination of a hysterectomy specimen.
- The preoperative diagnosis is suggested by characteristic clinical manifestations (ie, menorrhagia and dysmenorrhea with a uniformly enlarged uterus) in the absence of endometriosis or leiomyomas.
- MRI is clearly the best imaging technique, but is expensive.
- Transvaginal ultrasound, although less accurate than MRI, can be useful for assessment of a woman with suspected adenomyosis

Submucosal leiomyoma

- Submucosal leiomyomas – These leiomyomas derive from myometrial cells just below the endometrium. These neoplasms often protrude into the uterine cavity
- Pt come with Abnormal uterine bleeding (any type of bleeding)

- Risk factor :

-nullipara

-early menarche ,

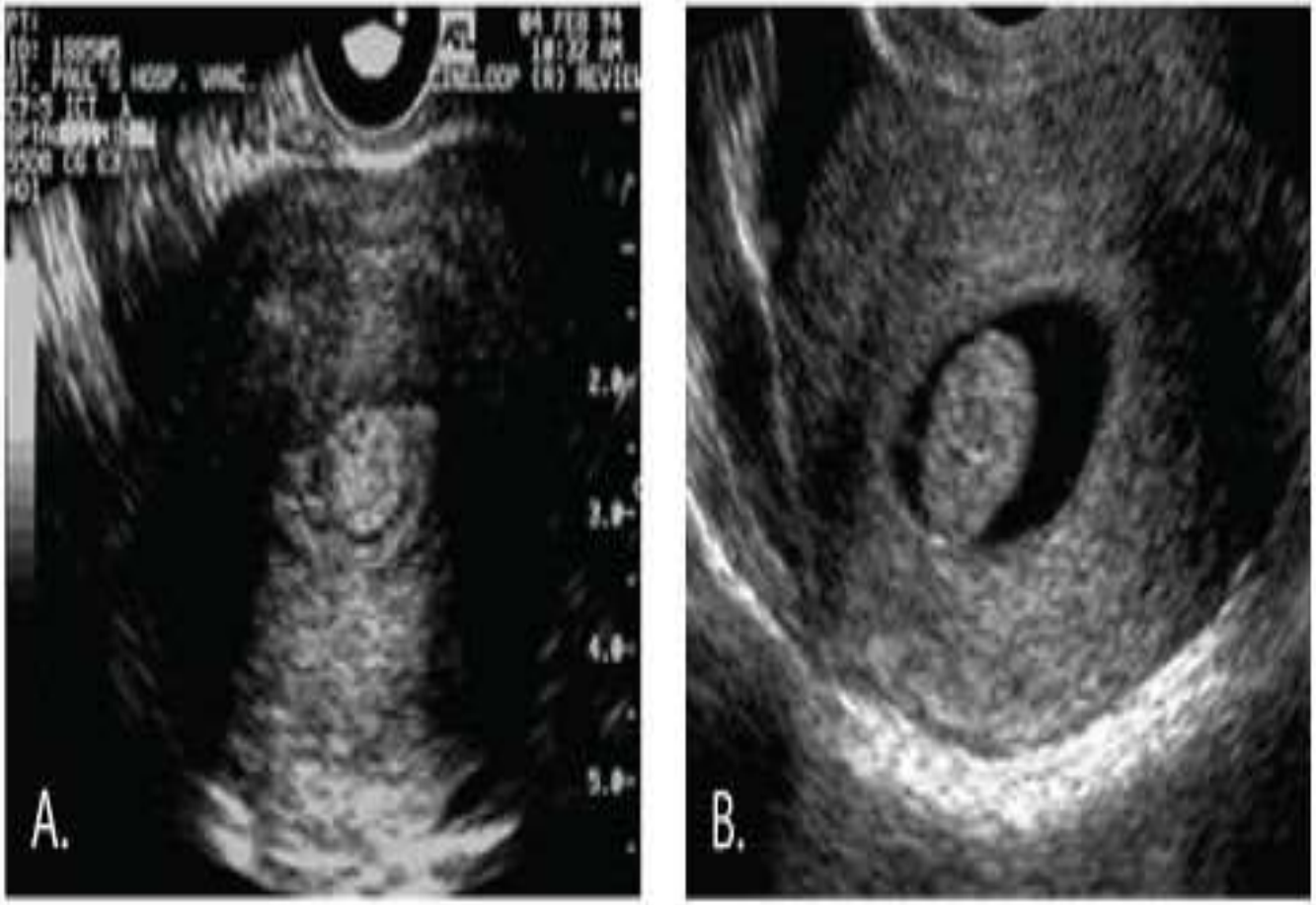
-FHx , (obese)

-alcoholic , infections

-Black race

cont

- **Hx-PE-imaging - > US**
- Ultrasound — Transvaginal ultrasound has high sensitivity
- Saline infusion sonography (sonohysterography) improves characterization of the extent of protrusion into the endometrial cavity by submucous myomas and allows identification of some intracavitary lesions not seen on routine ultrasonography
- HYSTEROSCOPE
- HSG



SIS outlines the intrauterine polyp (Figure B), which could not be easily seen with in the routine transvaginal pelvic ultrasound (Figure A).

Malignancy And Hyperplasia

- Premalignancy (endometrial hyperplasia) Malignancy of the genital tract (cervical, endometrial)

COEIN

ETAF SHABAN

COEIN in PALM-COEIN is an abbreviation that includes physiologic, non-structural and other unspecified cause for AUB in a non-gravid uterus of reproductive age group

VON WILLEBRAND DISEASE

- Presents as HMB
- Von Willebrand disease, the most common inherited bleeding disorder among American women
    a). 0.6-1.3% in normal population
    b). 5-24% of pts with AUB
    c). 74-92% of pts with this disease complain of AUB
- Type I and type II are inherited autosomal dominant: There's type III as well
    -Type I is more common and less severe
    -Type III is less common but more severe

C-COAGULATION: VON WILLEBRAND DISEASE CONT.

- Pts with VWD may also present with bruising and bleeding tendency or history of excessive bleeding during surgery

**Absence of these symptoms does not exclude the disease

C-COAGULATION

LIVER DYSFUNCTION: Pts with cannot make enough clotting factors → increase bleeding tendency

LEUKEMIA: could be a cause of AUB. The proliferation of abnormal blood components will compromise the synthesis and functional normal platelets which would lead to thrombocytopenia

**Presents as HMB and the bleeding is usually serious

DRUGS: Warfarin, Aspirin, Estrogen, Tamoxifen…etc

THROMBOCYTOPENIA

O-OVULATION DYSFUNCTION

PATTERN OF AUB IN OVULATORY DYSFUNCTION

1. Short cycles or HMB
2. Periods of amenorrhea followed by periods of painless profuse and prolonged bleeding (anovulatory amenorrhea)
3. Periods of amenorrhea followed by scanty bleeding

O-OVULATION DYSFUNCTION

MOST COMMON NON-STRUCTURAL CAUSE OF **AUB**

PCOS: HPO Dysfunction

- high LH→ theca cell produces more Androsterodione→ excess flows into the blood → adipose tissue converts the excess to eestrone → -ve feedback on pituitary to stop FSH

ENDOMETRIOSIS: 20% of pts with endometriosis have anovulatory cycles for unknown reasons **(HMV and AUB)**

O-OVULATION DYSFUNCTION

CONGEINITAL ADRENAL HYPERPLASIA (CAD): presents with irregular or absent mestrtual bleeding

Other symptoms

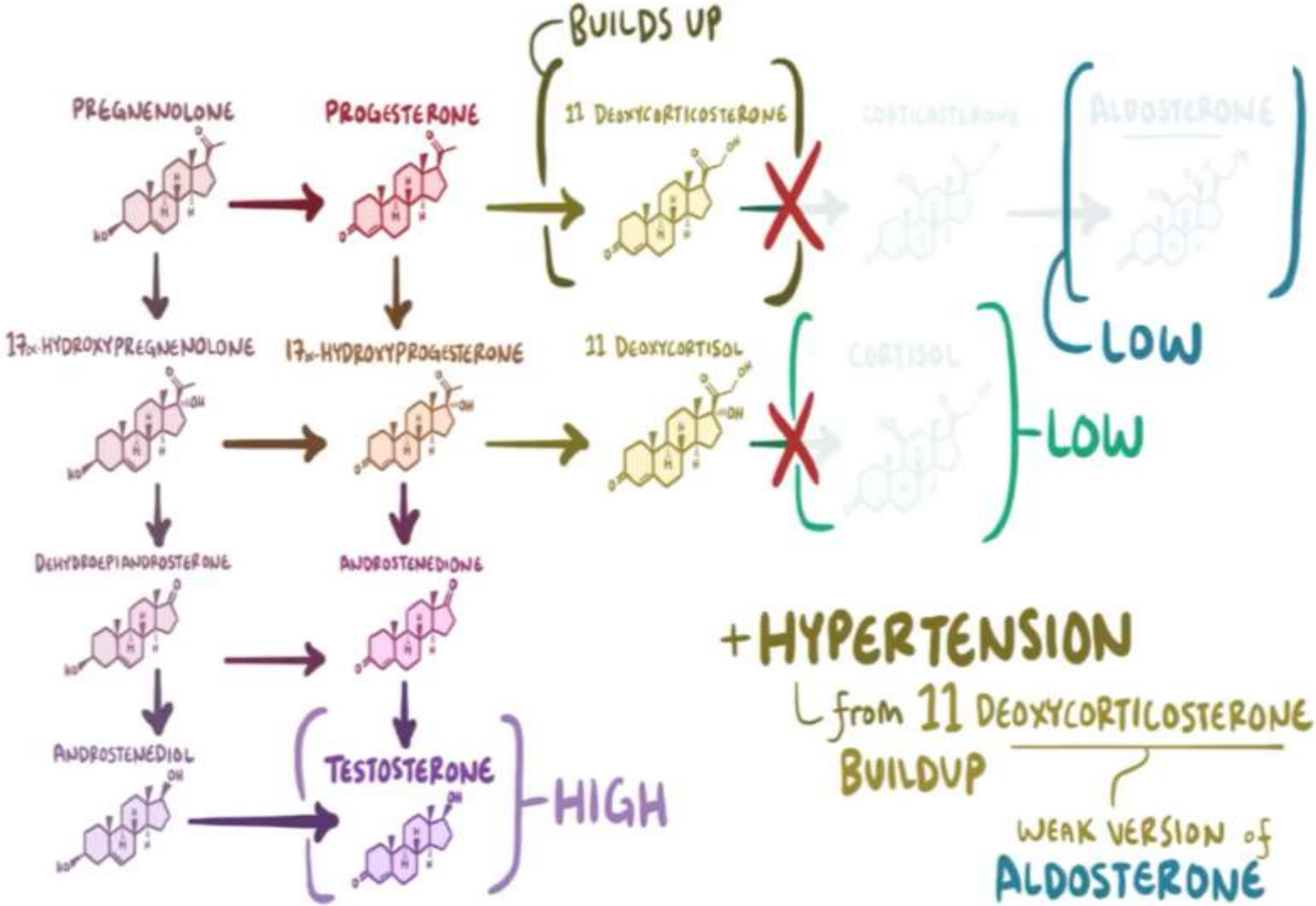
ambigious genitalia, weight loss, dehydration, hypoglycemia, vomiting, precocious puberty infertility, masculine charachteristucs

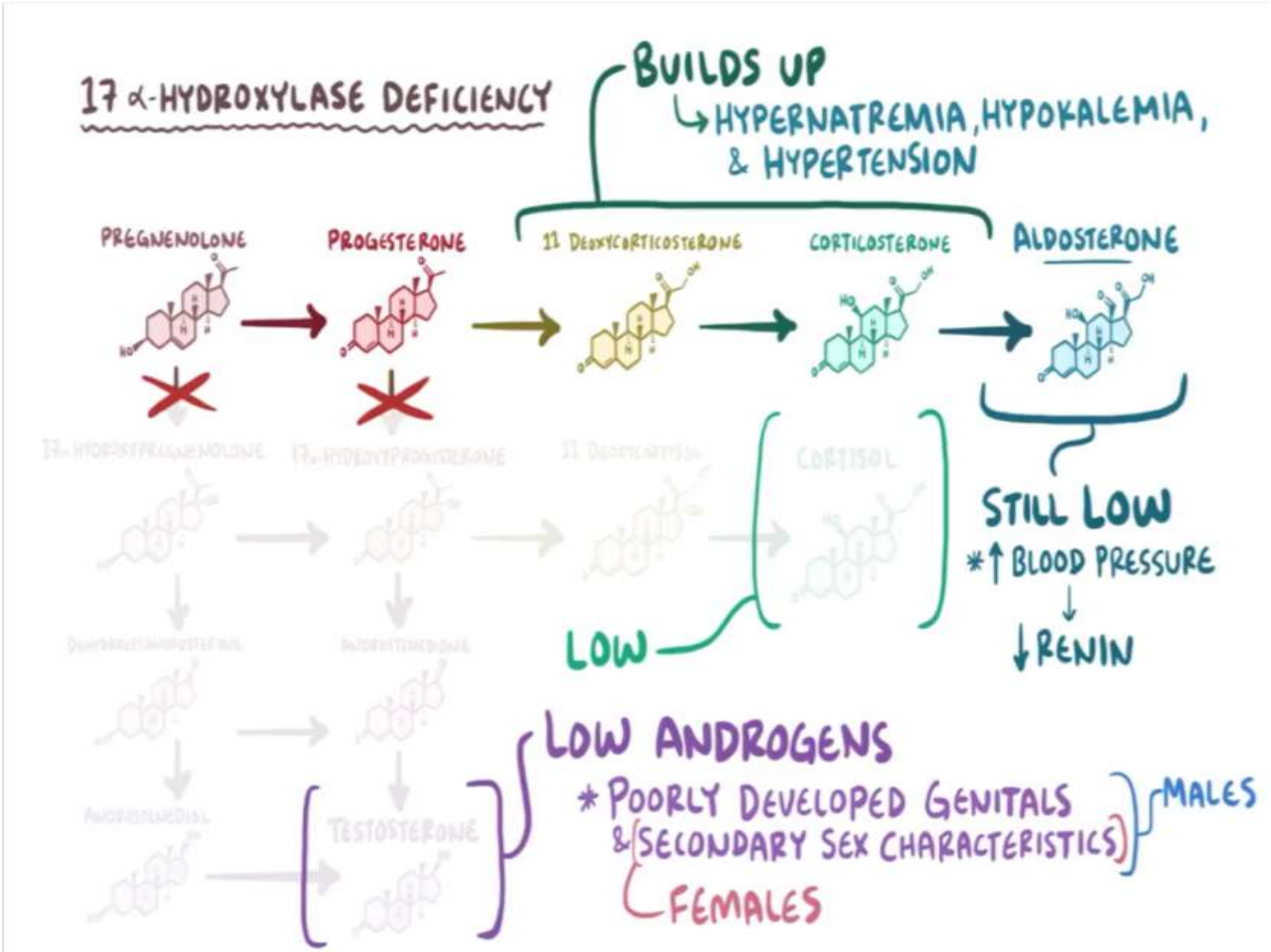
3 types

- 21-hydroxylase deficiency
- 11-beta-hydroxylase deficiency
- 17-alpha-hydroxylase def

21-Hydroxylase deficiency

11 β-HYDROXYLASE DEFICIENCY




17 α-HYDROXYLASE DEFICIENCY
BUILDS UP
↳ HYPERNATREMIA, HYPOKALEMIA, & HYPERTENSION
PREGNENOLONE
PROGESTERONE
11 DEOXYCORTICOSTERONE
CORTICOSTERONE
ALDOSTERONE
STILL LOW
* ↑ BLOOD PRESSURE
↓ RENIN
LOW
CORTISOL
LOW ANDROGENS
* POORLY DEVELOPED GENITALS & SECONDARY SEX CHARACTERISTICS
MALES
FEMALES
TESTOSTERONE

O-OVULATION DYSFUNCTION

CUSHING DISEASE: increase level of androgens and cortisol

- **cortisol suppresses the GnRH → suppresses the FSH and LH pulsations

HYPERPROLACTINEMIA: it inhibits GnRH → suppresses FSH and LH pulsation

THYROID ABNORMALITY:

- Both hypo and hyperthyroid can cause oligomenorrhea or amenorrhea by increase in SHBG (hyper) or increase in prolactin levels (hypo) by high TSH
- Hypo can also cause polymenorrhea by decreased progesterone and SHBG production

**most common systemic disease associated with AUB (23%of pts with hypo have AUB)

E-ENDOMETRIAL

Primarily caused from the endometrium

Regular ovulatory cycles with HMB

E.G.

- Vasculogenesis abnormality
- Endometritis
- Abnormality in the PGE, PGF2alpha receptors

I-IATROGENIC

Cu-IUD→ HMB

LNG-IUD→ IMB + IRREGULAR BLEEDING

HRT in post menopausaul women → irregular bleeding

estrogen-progesterone therapy → irregular bleeding

Drugs

N-NOT OTHERWISE SPECIFIED

AV malformation in uterus

CKD: Pts with kidney impairment (esp CKD) have increased bleeding tendency due to impairment in the adhesion of platelets to the vessel wall because of uremic toxins

HEPATIC DISEASE: liver is responsible for metabolism of estrogen, so decrease in its function would cause increase in estrogen levels → endometrial hyperplasia

Sex hormone secreting ovarian neoplasm

MANAGMENT

Medical therapy

- Hormonal treatment :

  - **Estrogen-progestin contraceptives**

- Combined oral contraceptives (OCs) are first-line management for many patients with AUB. The advantages of estrogen-progestin contraceptives are that they typically make bleeding more regular, lighter, and reduce dysmenorrhea, as well as provide contraception, if needed.
- Reductions in menstrual blood loss ranging from 35 to 69 percent
- Other routes of administration include the transdermal contraceptive patch and vaginal contraceptive ring. The efficacy of these in treating AUB is similar, and the choice of delivery system depends on patient preference.

- OCs may be prescribed in a cyclic (with a monthly withdrawal bleed), extended (for instance, with a withdrawal bleeding every three months), or continuous (no withdrawal bleed) regimen. Although extended or continuous OC use may more effectively suppress menstrual blood loss in many patients, unscheduled (breakthrough) bleeding is more common with this approach than with traditional 28-day OC formulations

- OCs are contraindicated in patients who are at elevated risk for thrombosis.

- **Levonorgestrel intrauterine device**

- A highly effective and easy-to-use treatment option for AUB and is approved by the FDA for treatment of HMB. Most patients using the LNG 52 develop scant bleeding or amenorrhea.
- Mean reductions in mean blood loss (MBL) of around 95% are achieved by 1 year after insertion.
- LNG 52 reduced menstrual blood loss more than other medical treatments and was comparable to endometrial ablation.
- Menstrual suppression may attenuate prior to five years of use, and patients may benefit from more frequent removal and replacement of the device
- In one large observational study, increasing use of the LNG 52 was accompanied by a decrease in use of oral tranexamic acid, oral progestogen, and hysterectomy

- **Depot medroxyprogesterone acetate**

Typically used for patients with AUB who have contraindications to or prefer to avoid estrogen and/or if they prefer this method of contraception. DMPA is not an option for patients who are trying to conceive or interested in conceiving in the next one to two years.

One short-term study in patients with AUB-O or HMB noted that after two months, those using DMPA experienced a 49% reduction in menstrual blood loss.

- **Norethindrone acetate**

- 5 mg tablets one to three tablets daily
- Promotes endometrial suppression
- May cause progestin-related side effects, including dysphoria, bloating, and an increased appetite.
- In some patients in whom AUB has responded well to higher doses of norethindrone acetate (eg, one to three 5 mg tablets daily), we slowly taper the dose down to, if possible, as low as 2.5 mg daily.

- **GnRH agonist**

These are only used in the short term due to the resulting hypo-oestrogenic state that predisposes to osteoporosis.

They may be used preoperatively to shrink fibroids or cause endometrial suppression to enhance visualization at hysteroscopy.

❑ Non-hormonal treatment :

- **Tranexamic acid**

- An option for treatment of patients with HMB who do not desire or contraindicated to use hormonal treatment (eg, patients with a personal history of breast cancer).
- Is an antifibrinolytic agent that competitively blocks the conversion of plasminogen to plasmin, thereby reducing fibrinolysis.
- Reduces menstrual blood loss by 50%
- Advantages of this antifibrinolytic medication are that it may be used while trying to conceive and is taken only during menses, rather than daily.
- Use of tranexamic acid was associated with an elevated risk of thrombosis

- **Nonsteroidal anti-inflammatory drugs**

- NSAIDs used to treat HMB include ibuprofen, naproxen, and mefenamic acid.
- NSAIDs reduce the volume of menstrual blood loss by causing a decline in the rate of prostaglandin synthesis in the endometrium, leading to vasoconstriction and reduced bleeding.
- Start on the first day of bleeding and should be continued for four or five days or until menstruation ceases
- Advantages of NSAIDs include:

1. Do not increase risk of thrombosis
2. Low risk of adverse effects
3. Reduction of dysmenorrhea
4. Low cost and often available over the counter
5. Unlike most hormonal therapies, they do not need to be taken daily

Surgical therapy

- **Myomectomy**

Is an option for patients with uterine leiomyomas. If one or two intracavitary myomas are present, a hysteroscopic myomectomy is minimally invasive and may resolve AUB symptoms.

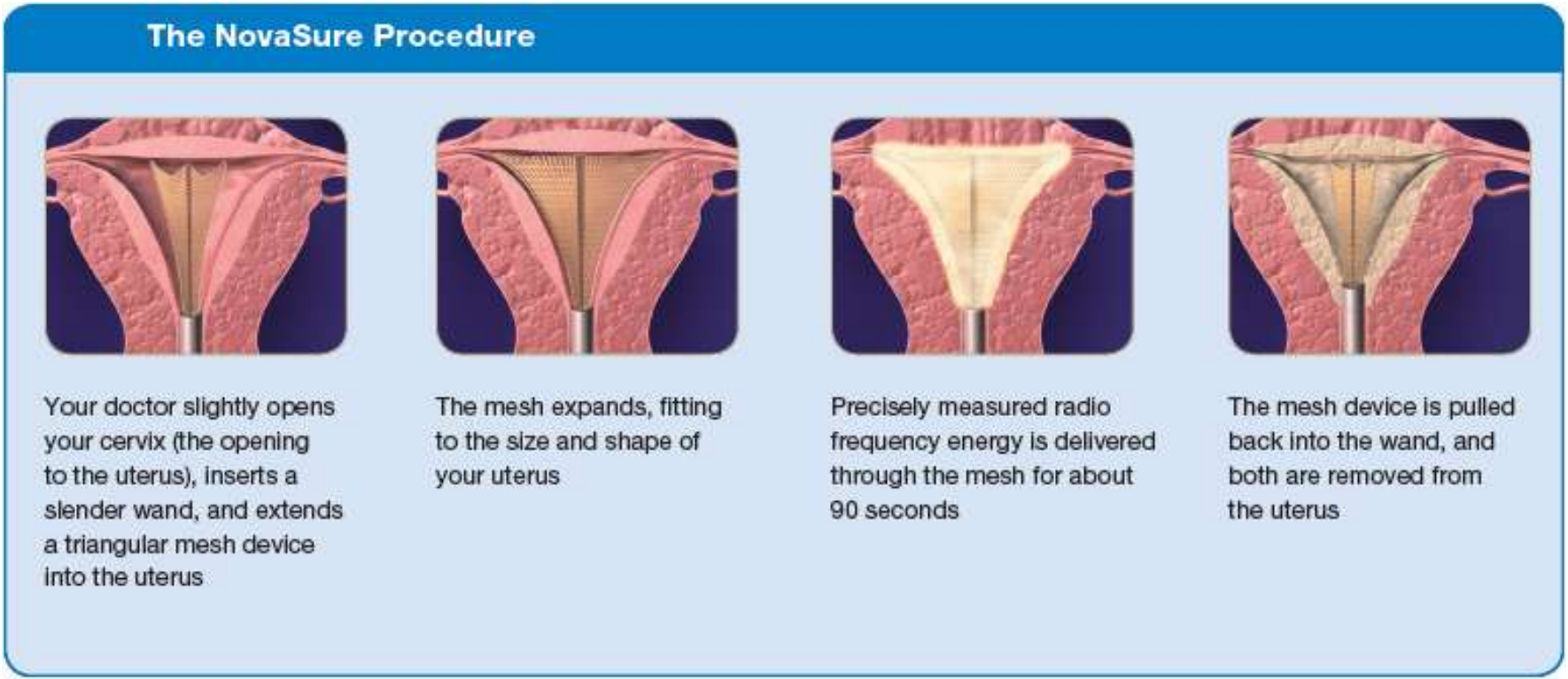
Patients with fibroids at other sites that result in AUB may be initially treated with medical therapy. However, laparoscopic or open myomectomy is required if medical management fails and if the patient desires to preserve fertility.

- **Endometrial ablation**

Endometrial ablation is a minimally invasive option for treatment of heavy or prolonged uterine bleeding when medical therapy fails or in patients who do not want to use chronic medical therapy.

The first-generation techniques including transcervical resection of the endometrium with electrical diathermy or rollerball ablation have largely been replaced by newer second-generation techniques including:

- Impedance controlled endometrial ablation (Novosure™).
- Thermal uterine balloon therapy.
- Microwave ablation (Microsulis™)



MIRENA VS. ENDOMETRIAL ABLATION

Both are effective in reducing menstrual blood loss. The decision to use the LNG 52 or endometrial ablation depends on a patient's preferences regarding treatment factors, such as plans for fertility and contraception, convenience, and risks of anesthesia. The LNG 52 is a reversible contraceptive. Pregnancy is contraindicated after endometrial ablation, but the procedure may not prevent pregnancy; thus, patients will need to continue to use contraception following ablation. The LNG 52 is placed in an office setting and requires no or local anesthesia. Endometrial ablation can also be done in an office but is often performed in an operating room under general anesthesia. If successful, endometrial ablation is performed once, while the LNG 52 needs to be replaced at regular intervals every five years.

- **Uterine artery embolization**

Uterine artery embolization is an option for patients with uterine leiomyomas.

Women wishing to retain their fertility should be counseled carefully before undergoing UAE as the effects on subsequent reproductive function are uncertain. Pregnancies have been reported in the literature, but concerns remain over premature ovarian failure and effects on the endometrium that may lead to abnormal placentation.

- **Hysterectomy**

Hysterectomy represents definitive treatment for uterine bleeding. This procedure has a high rate of patient satisfaction because it is curative, is frequently performed after medical management has failed, is not associated with drug-related side effects, and does not require repeated procedures or prolonged follow-up.

THANK YOU!