



Abnormal Uterine Bleeding (AUB)

Causes & Diagnosis

**Dr. Ei Shwe Syn
Consultant
CWH, Yangon**

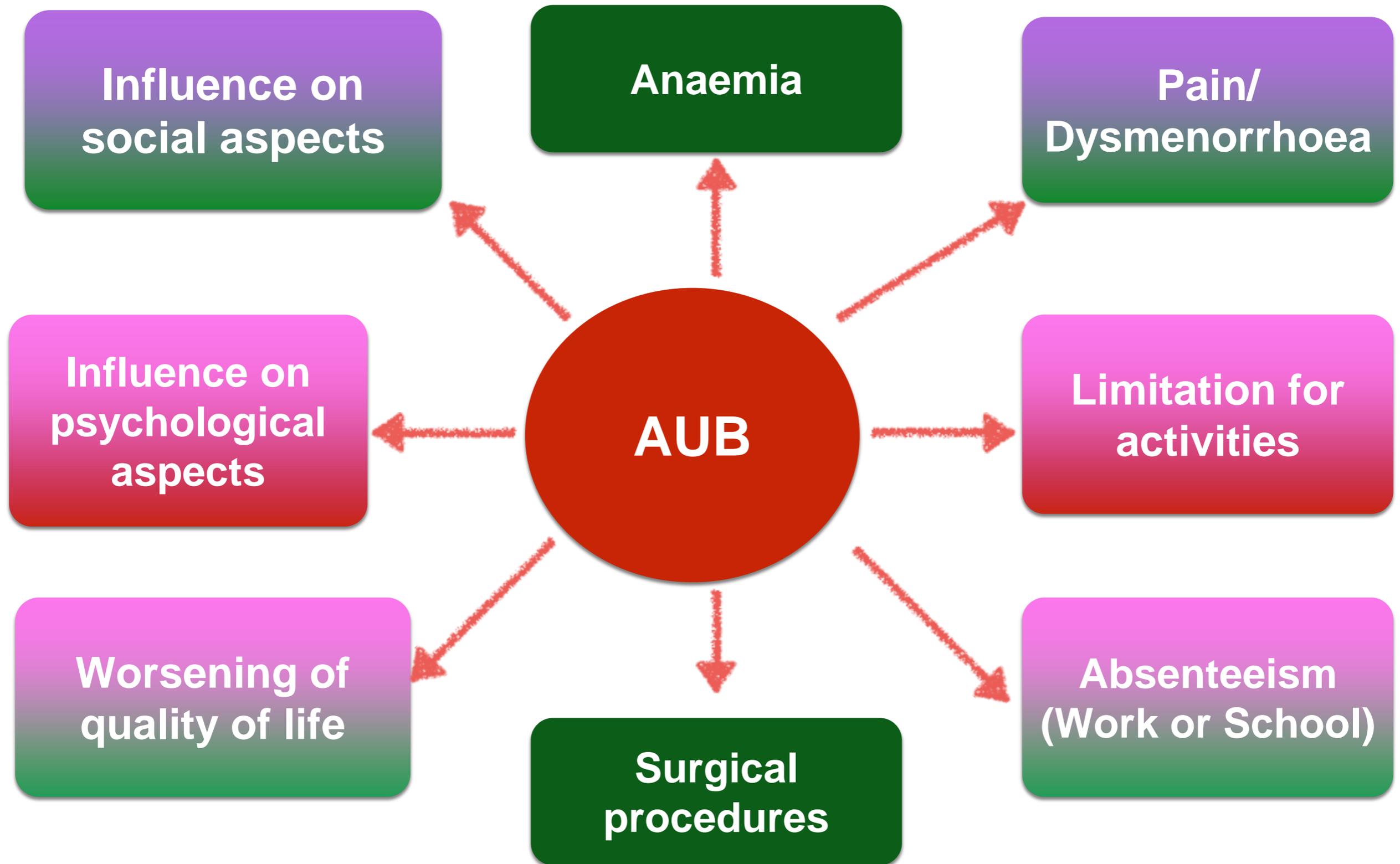
Session Outlines

- Scope of the problem
- Brief overview of normal menstrual cycle
- Terminology of AUB
- FIGO nomenclature & PALM-COEIN classification of AUB
- Causes & Diagnosis

Scope of the problem

- **AUB** affects up to 30% of women throughout their reproductive lifetime
- 1/3 of outpatient visits to the Gynecologist
- Responsible for over one third of hysterectomies
- US study reported financial losses of >\$2000 per patient per annum due to work absence and home management costs

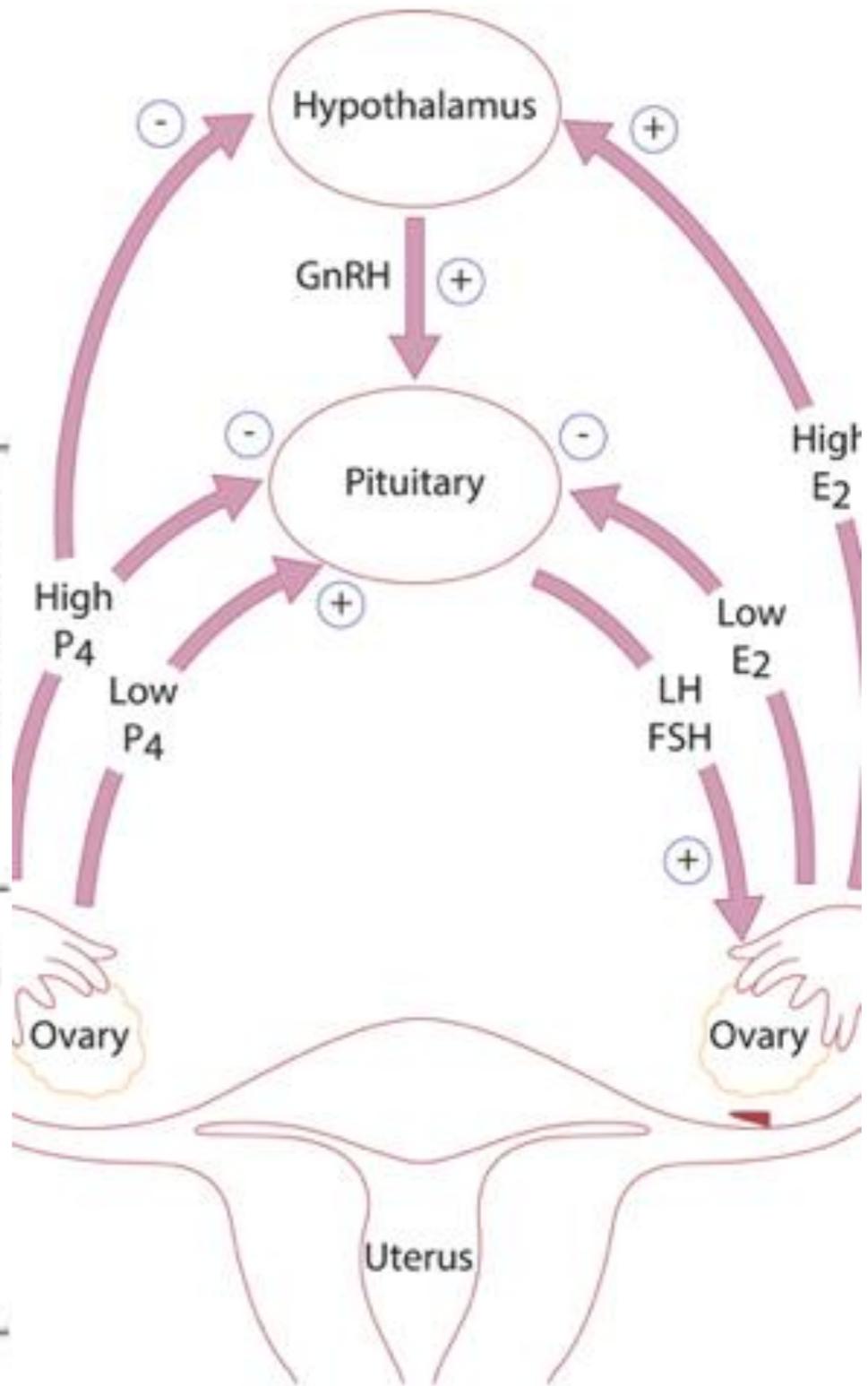
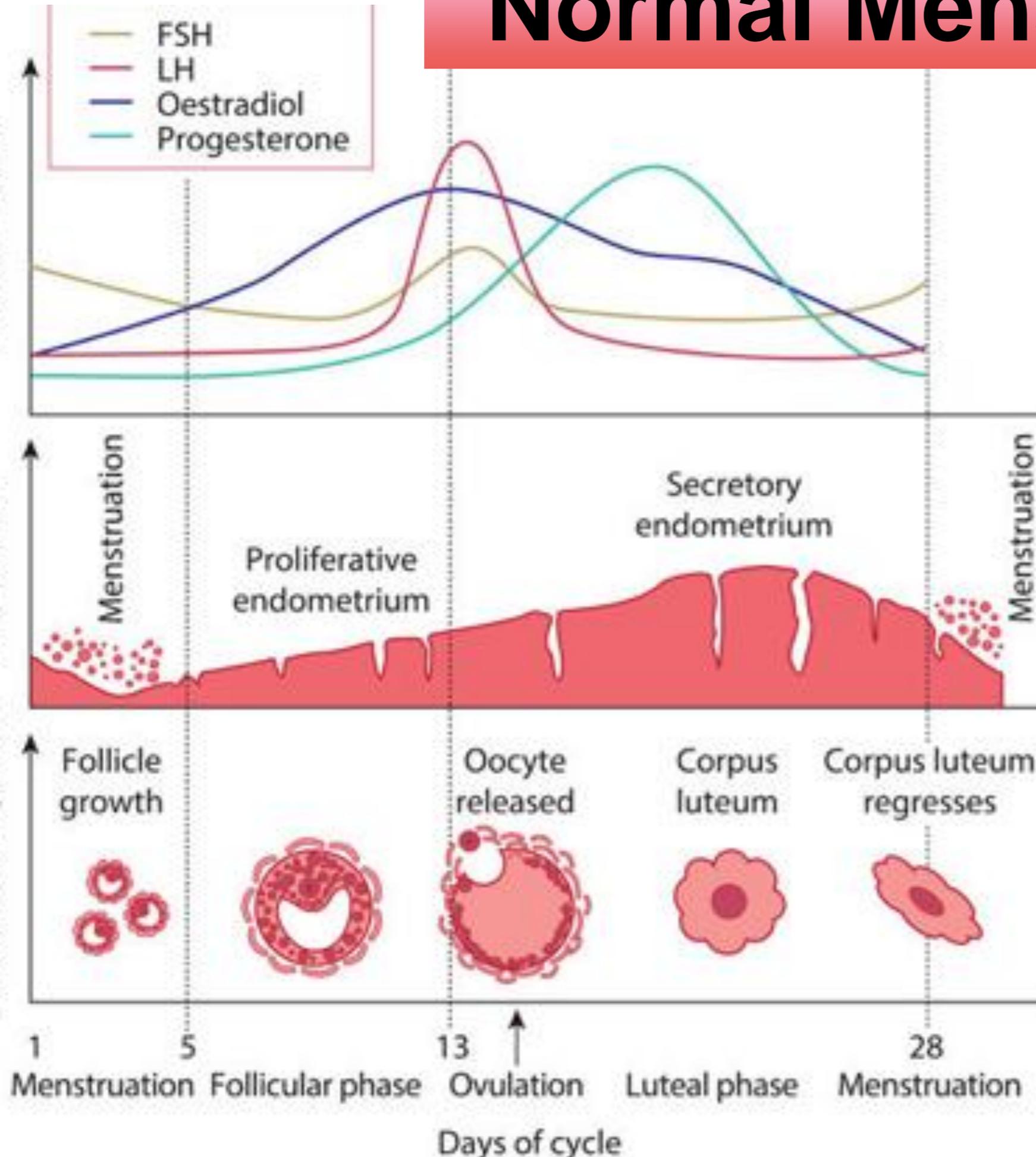
Repercussions of abnormal uterine bleeding on different aspects



What is “Normal” & What is “Abnormal Uterine Bleeding”?



Normal Menstrual Cycle



Menstrual parameters

Frequency

24-38 day

Frequent

Normal

Infrequent

Regularity

<20 D / 12 m

Absent

Regular

Irregular

Duration

4.5-8 days

Prolonged

Normal

Shortened

Volume

5-80 ml

Heavy

Normal

Light

So...What is Abnormal Uterine Bleeding?

- Bleeding between periods (IMB)
- Bleeding during/after sex (PCB)
- Bleeding after menopause (PMB)
- Bleeding heavier or more days than normal
- Spotting anytime in the menstrual cycle
- Menstrual cycles that are longer/ shorter than suggested normal range etc.....

AUB: Definition

- **AUB** is defined as any variation from the normal menstrual cycle which includes changes in **regularity** and **frequency** of menses, **duration** of flow, or **amount** of blood loss (non-pregnant women).
- AUB is umbrella term which encompass HMB, IMB, PMB.....
- **Acute AUB** _ *require immediate intervention* to prevent further loss
- **Chronic AUB** _ *(+)6 months*

New Terminology

2009

FIGO; MDG

FIGO

PALM-COEIN

2011

2012

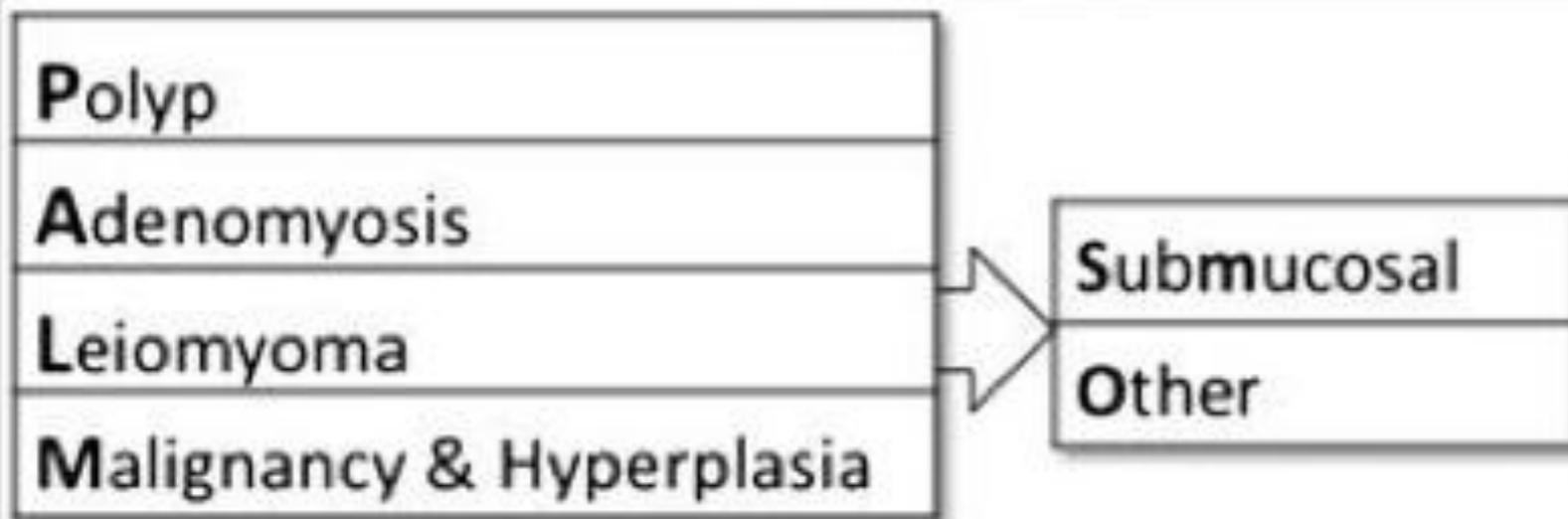
Endorsed by
ACOG

New	Excluded
AUB (PALM COEIN)	Menorrhagia
	Metrorrhagia
	Oligomenorrhea
	Polymenorrhea
	DUB

Causes of AUB

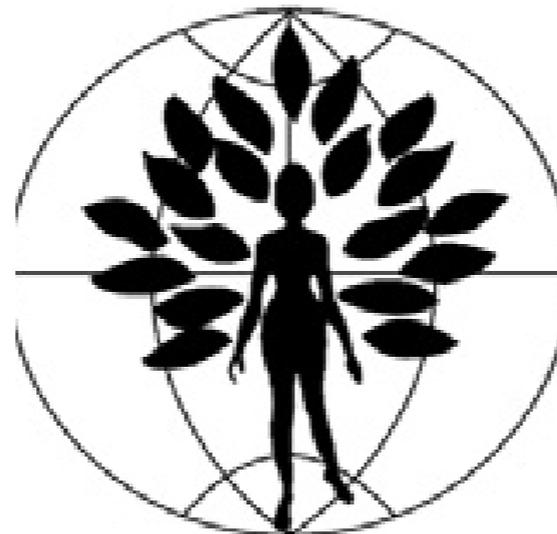
FIGO System for AUB, 2011

Structural Causes



Non-structural Causes

C oagulopathy
O vulatory Dysfunction
E ndometrial
I atrogenic
N ot Yet Classified



www.figo.org





Structural Abnormalities

- **P – Polyps** – scored as Present or Absent
- **A – Adenomyosis** - scored as Present or Absent
- **L – Leiomyoma**
 - Primary level – Present or Absent
 - Secondary level – Distinguish between submucosal (SM) & others (O)
 - Tertiary level – Detail location/size of uterine fibroids
- **M – Malignancy & hyperplasia**

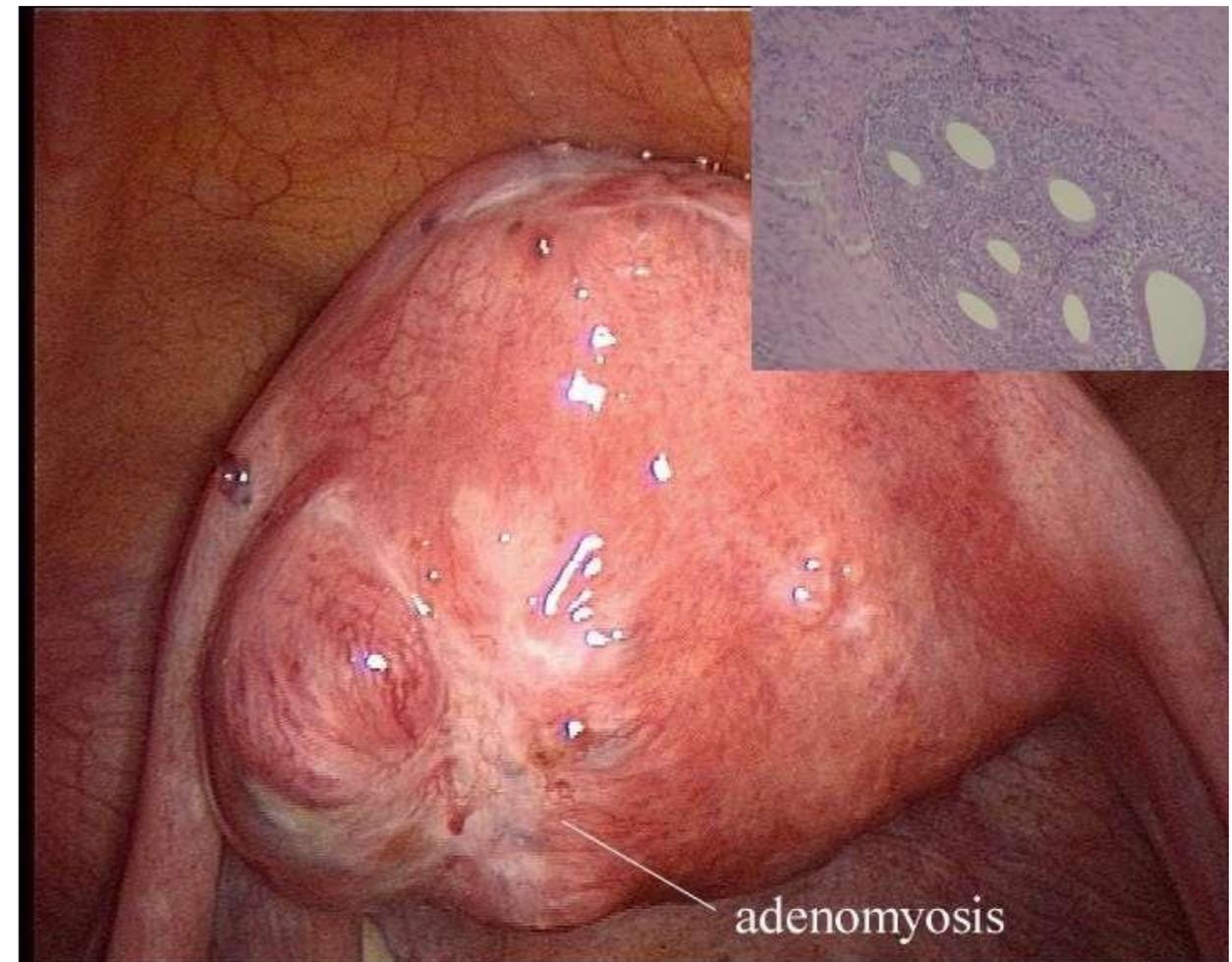
AUB-P; Polyps (8-35 %)

- **Pre-menopausal polyps:**
 - 64 – 88% have symptoms
 - Present with HMB, IMB, or PCB
 - Symptoms do NOT correlate with number, diameter & site
- **Post-menopausal polyps:**
 - Most are symptom free
 - Cause for 21-28% of PMP bleeding
 - Associated with cervical polyps in 24-27%
 - Incidence of CA varies between 0–4.8%
- **Diagnosis:** US, SIS, hysteroscopy



AUB-A; Adenomyosis

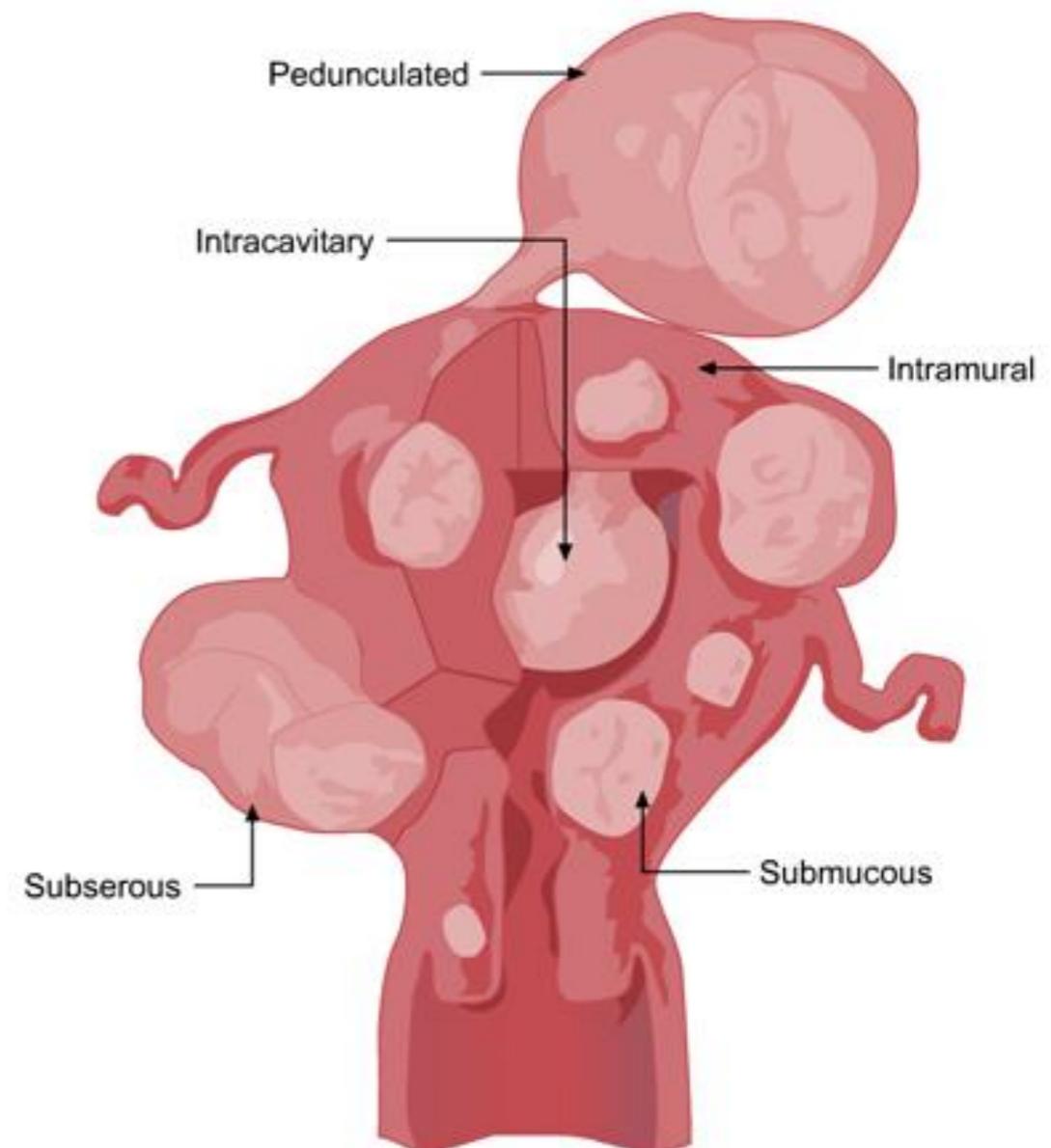
- Ectopic endometrial glands & stroma within the myometrium
- Hypertrophy & hyperplasia of surrounding myometrium
- Usual presentation: HMB, uterine enlargement, & dysmenorrhea



AUB-L; Leiomyoma

- Smooth muscle tumours of the uterus
- Generally benign (<1%) malignant transformations...Leiomyosarcoma
- Submucosal leiomyomas are more often associated with AUB

- **1^{ry} level: AUB-L**
- **2^{ry} level: Submucosal – AUB-L_{SM}**
 - **Other – AUB-L_O**
- **3^{ry} level: Types 0-8**



Primary

Absent

OR

Present

Secondary

Submucous

OR

Other

Tertiary

0 Pedunculated intracavity

1 $\leq 50\%$ intramural

2 $> 50\%$ intramural

3 Intramural but contacts endometrium

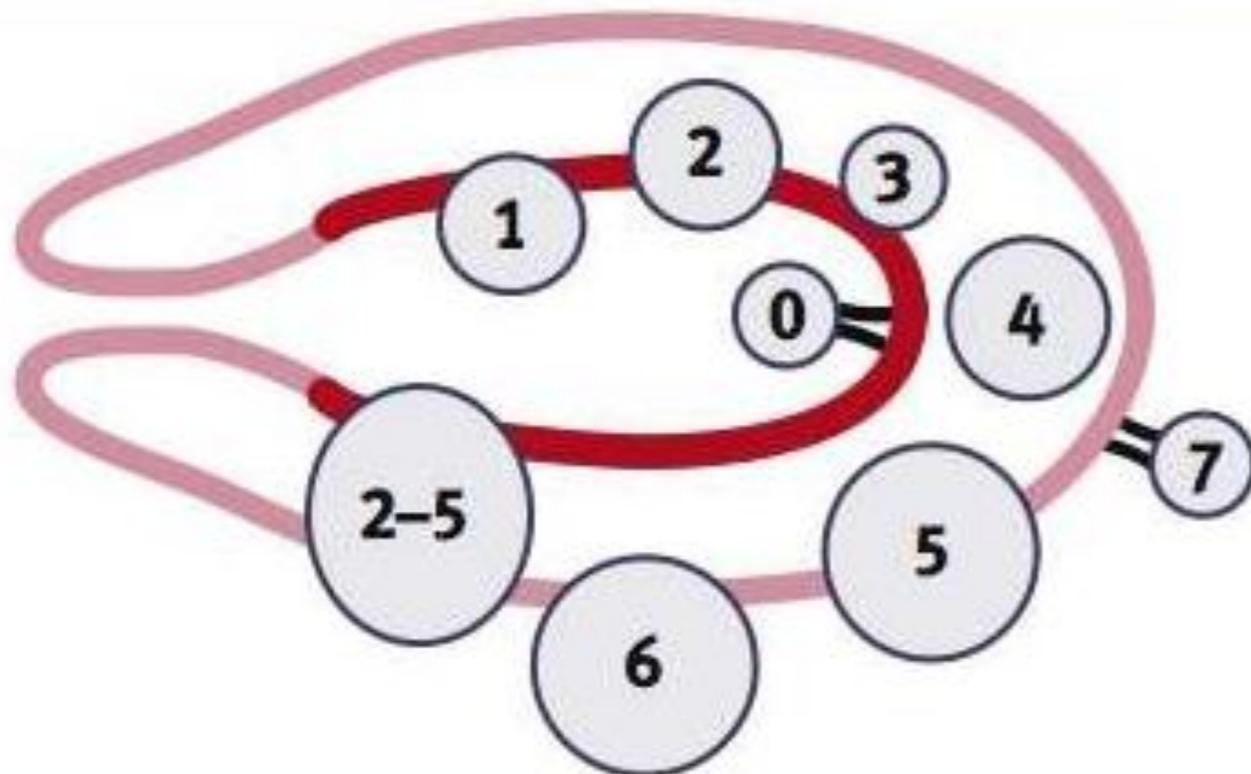
4 Intramural

5 Subserous $\geq 50\%$ intramural

6 Subserous $< 50\%$ intramural

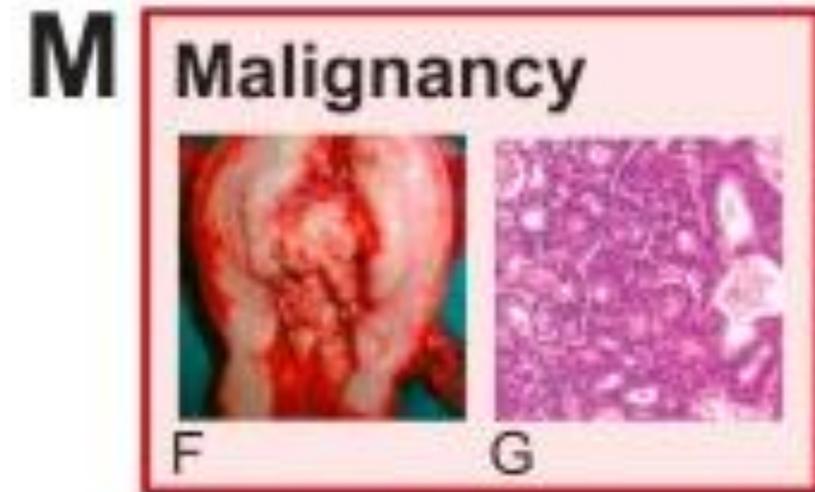
7 Subserous pedunculated

8 Other (eg cervical parasitic)



AUB-M; Malignancy & Hyperplasia

- Common presentation - PMB
- Endometrial cancer- Relatively uncommon in reproductive age women
- Increasing obesity and rising prevalence of the metabolic syndrome_ markedly increased in frequency.
- (Risks _ Age, obesity, PCOS, Nullip, DM, HNPPCC)
- Up to 40% of patients with a biopsy _hyperplasia with atypia _concomitant endometrial adenocarcinoma present



Non-structural Abnormalities

- **C** – Coagulopathy
- **O** – Ovulatory Dysfunction
- **E** – Endometrial
- **I** – Iatrogenic
- **N** – Not yet classified



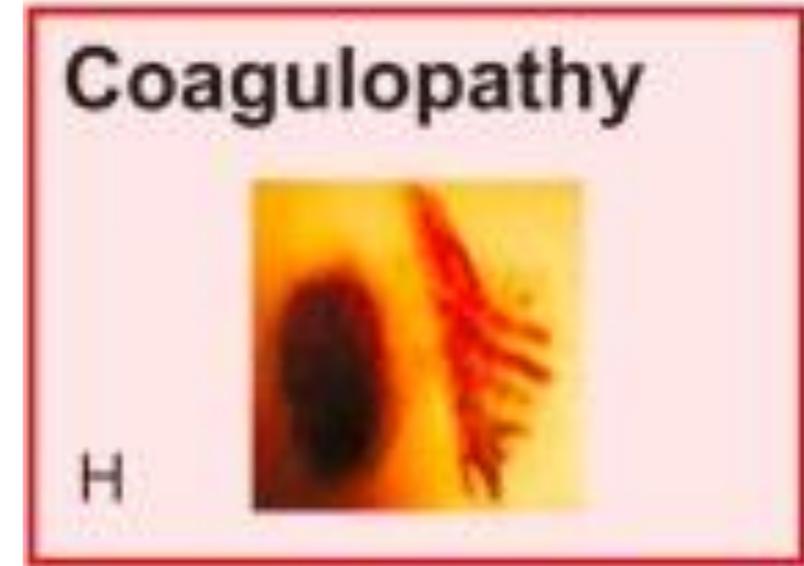
AUB-C; Coagulopathy

Prevalence: 3% of women presenting with HMB

Etiologies:

- Von Willebrand's disease (10%)
- Platelet Dysfunction
- Factor XI deficiency
- Factor X deficiency
- Category includes patient's taking anti-coagulants

- **HMB since menarche**
- **One of the following:**
 - PPH
 - Surgical related bleeding
 - Bleeding associated with dental work
- **Two or more of the following:**
 - Bruising 1-2 times/month
 - Epistaxis 1-2 times/ month
 - Frequent gum bleeding
 - Family history of bleeding problems



C

AUB-O; 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
- **Hyperthyroidism or hypothyroidism**
- **Luteal Phase Defect (LPD)**



AUB-E; Endometrial

Etiology: diagnosed by exclusion

- **Deficiencies of local production of vasoconstrictors**
 - Endothelin-1
 - Prostaglandin F_{2a}
- **Excessive production of plasminogen activators**
- **Increased local production of vasodilators**
 - Prostaglandin E₂
 - Prostacyclin I₂
- **Disorders of endometrial repair (inflammation)**
 - Chlamydia



AUB-I; Iatrogenic

Etiology:

- **Breakthrough bleeding (BTB)** using gonadal steroids is the major component of AUB-I :



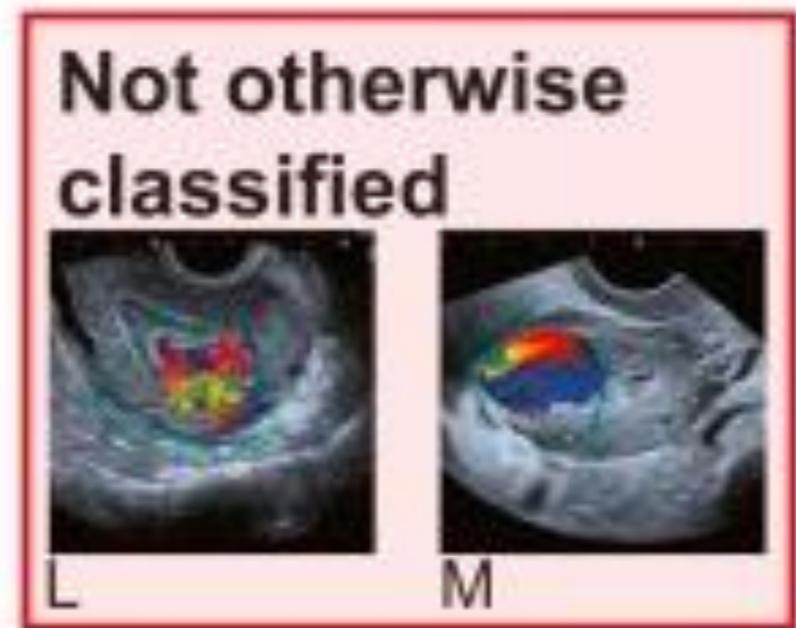
I Oral contraceptives
Continuous or cyclic progesterone
IUD or implant related bleeding

- **Cigarette smoking** : reduces the level of steroids because of enhanced hepatic metabolism
- **Systemic agents** that interfere with dopamine metabolism :
Serotonin uptake inhibitors

AUB-N; Not Yet Classified

Disorders that would be identified or defined only by biochemical or molecular biology assays

- Arterio-venous malformations
- Myometrial hypertrophy
- Category for new etiologies



- Pathological conditions of lower genital tract ??

Neonate

Estrogen withdrawal

Menopausa

Atrophy
Cancer
HRT

Premenarchal

Foreign Body
Trauma (sexual abuse)
Infection
Urethral prolapse
Sarcoma botryoides
Ovarian Tumor
Precocious Puberty

**Usual Causes of
AUB by Throughout
women life**

Perimenopausal

Anovulation
Polyps, fibroids,
adenomyosis
Cancer

Early-Postmenarchal

Anovulation
Bleeding Diathesis
Stress (psychogenic,
exercise induced)
Pregnancy
Infection

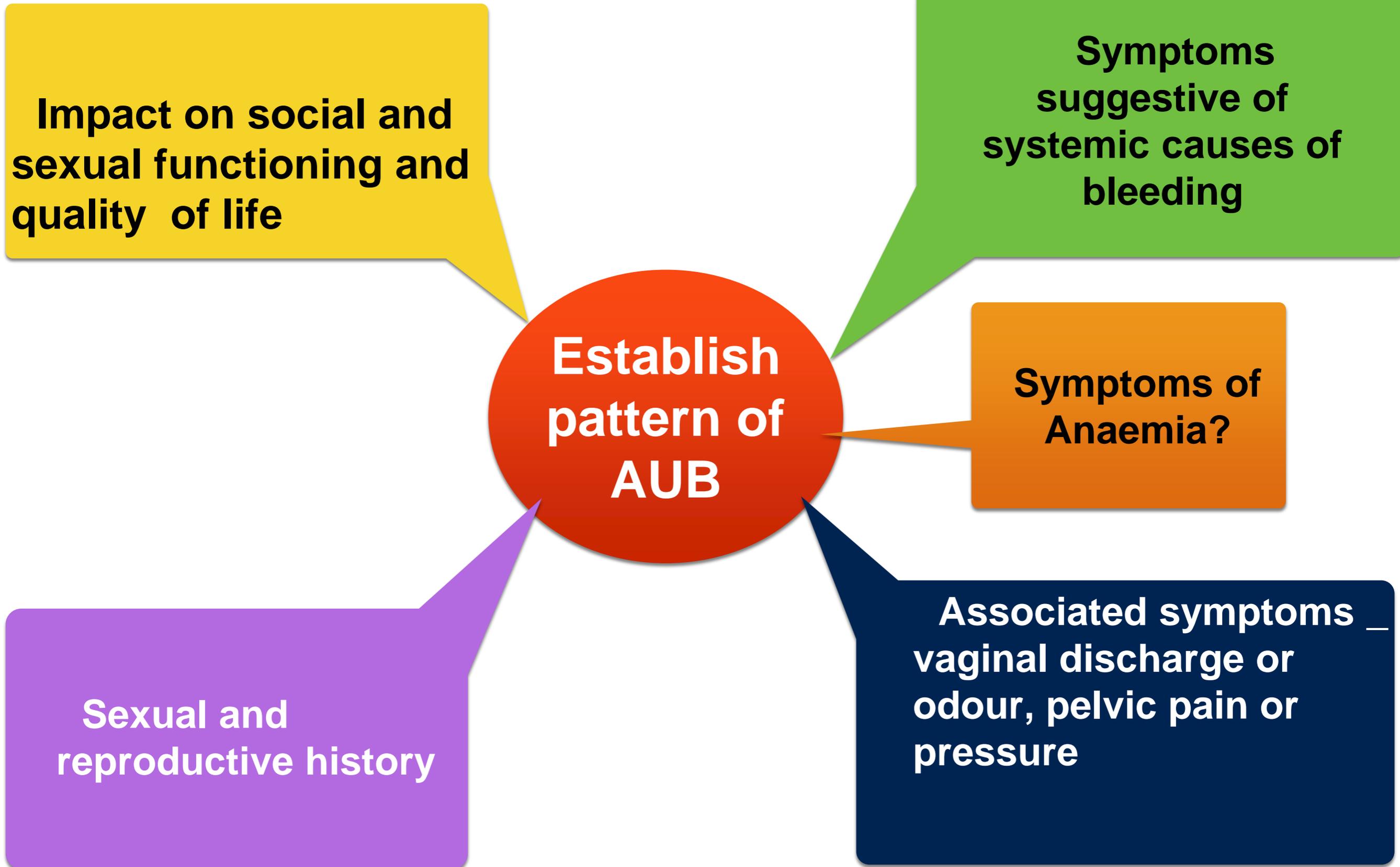
Reproductive Years

Anovulation
Pregnancy
Cancer
Polyps, fibroids, adenomyosis
Infection
Endocrine Dysfunction
(PCO, Thyroid, Pituitary)
Bleeding diathesis
Medication (eg,
Contraceptive agents)

Diagnosis of AUB

- **Targeted history**
- **Structured Examination**
- **Relevant Investigations**

Diagnosis: History



Physical Assessment

General assessment

- Vital signs
- Weight/BMI
- Thyroid exam
- Skin exam (pallor, bruising, striae, hirsutism, petechiae)
- Abdominal exam (mass, hepatosplenomegaly)

Gynecological examination

- Inspection vulva, vagina, cervix, anus, and urethra
- Bimanual examination uterus and adnexal structures
- PR if bleeding from rectum suspected or risk of concomitant pathology
- Testing: Pap smear, cervical cultures if risk for sexually transmitted infection

Laboratory testing for evaluating Acute AUB

Laboratory Evaluation	Specific Laboratory Tests
<ul style="list-style-type: none">• Initial laboratory testing	<ul style="list-style-type: none">• CBC• Blood group• Pregnancy test
<ul style="list-style-type: none">• Initial laboratory evaluation for disorders of hemostasis	<ul style="list-style-type: none">• PTT & PT• Activated partial thromboplastin time• Fibrinogen
<ul style="list-style-type: none">• Initial testing for von Willebrand disease	<ul style="list-style-type: none">• VWF antigen• Ristocetin cofactor assay• Factor VIII
<ul style="list-style-type: none">• Other laboratory tests to consider	<ul style="list-style-type: none">• TSH• Serum Fe, total Fe binding capacity, and ferritin• Liver function tests• <i>Chlamydia trachomatis</i>



Imaging

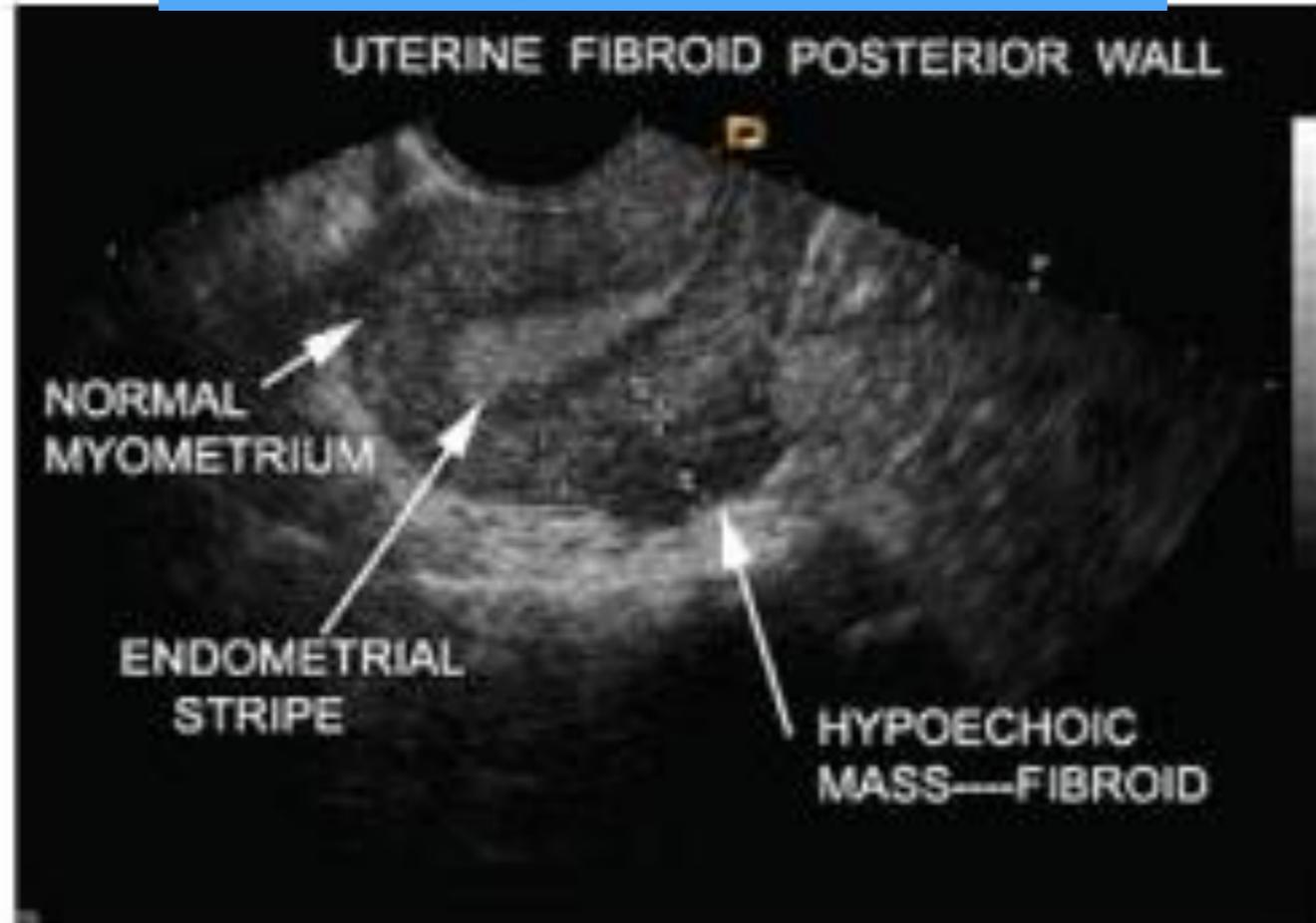
Imaging studies in cases of AUB may be indicated when:

- examination suggests structural causes for bleeding,
- conservative management has failed, or
- there is a risk of malignancy



If imaging is indicated, transvaginal ultrasound should be the

USS Image of Leiomyoma

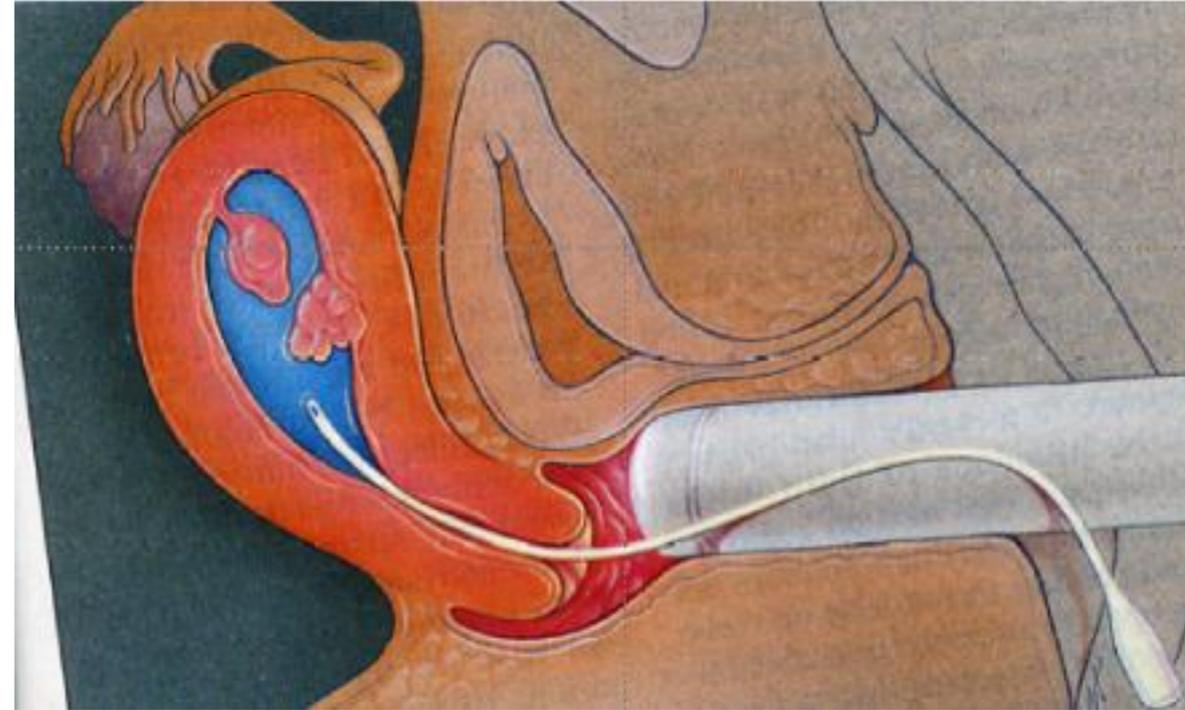


USS Image of Polyp

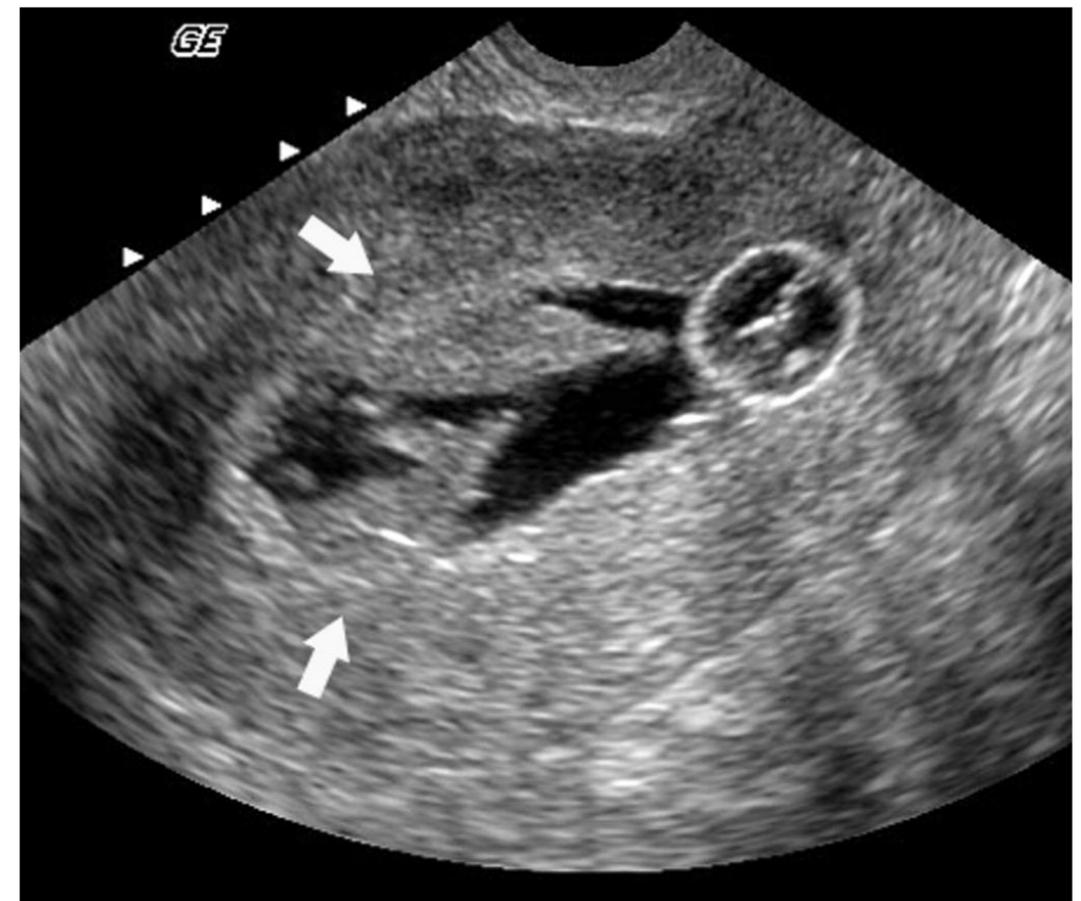


USS Image of Adenomyosis



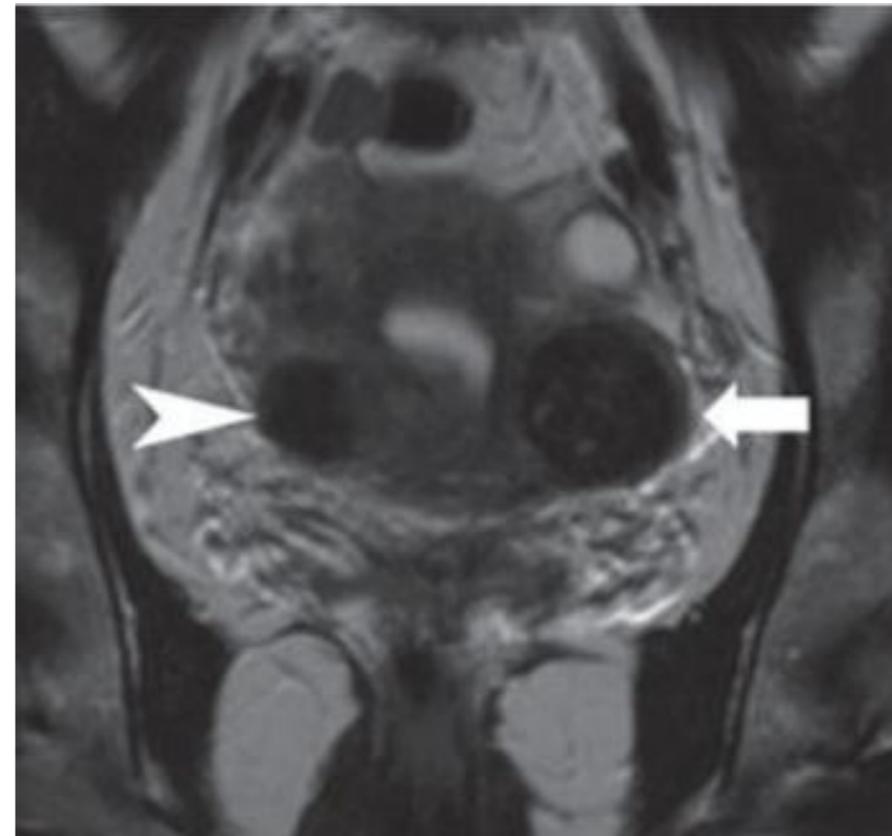


**SIS Is Superior to TV
US In Detection of
Intracavitary Lesions**

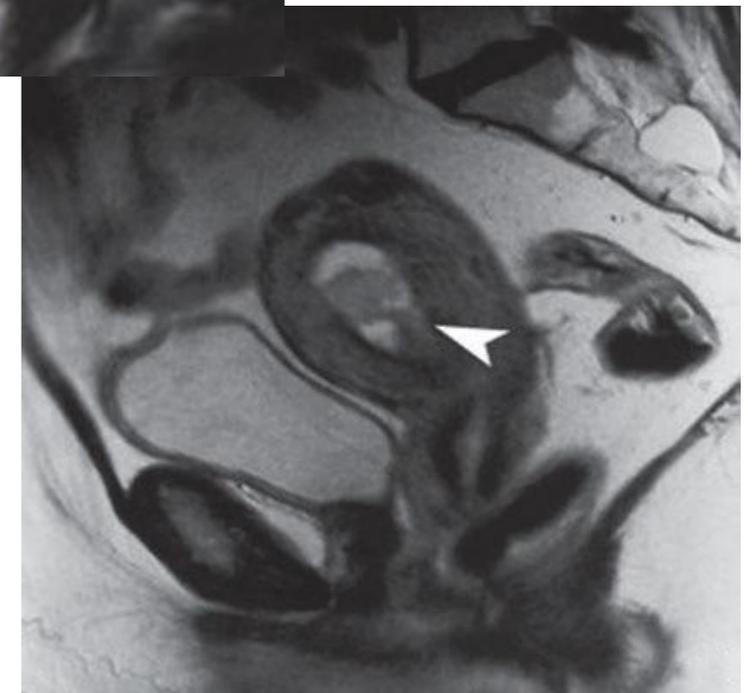


MRI

- Rarely indicated
- Helps mapping the exact location of fibroids in planning surgery and prior to embolization
- When TVS or instrumentation of the uterus (i.e. congenital anomalies) cannot be performed



**Intramural
(arrowhead)
subserous
(arrow)
leiomyoma**



**MRI image of a degenerated
polyp with irregular margin**

ENDOMETRIAL ASSESSMENT AND BIOPSY

Indications for endometrial biopsy in women with abnormal uterine bleeding

- Age > 40
- Risk factors for endometrial cancer
- Failure of medical treatment
- Significant intermenstrual bleeding

Consider endometrial biopsy in women with infrequent menses.....suggestive of anovulatory cycles



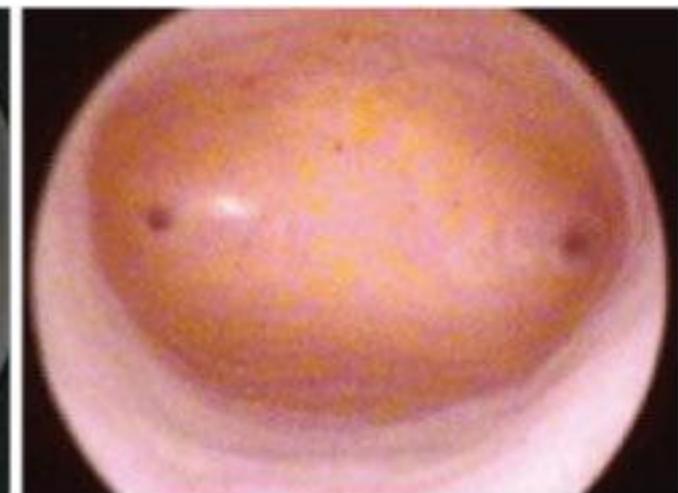
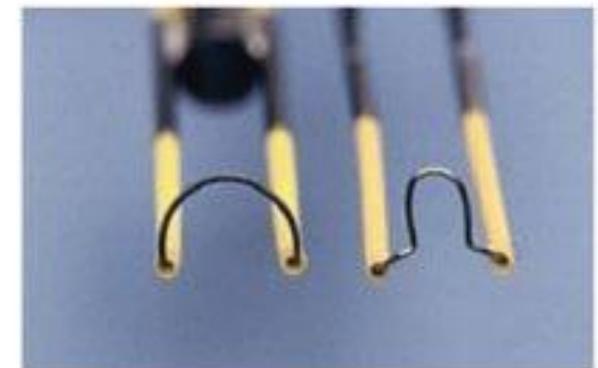
Pipelle® biopsy instrument



Hysteroscopy

- **Direct visualization of cavitary pathology**
- **Directed biopsy (main benefit over "blind" D&C)**
- May be performed in an office setting with or without minor anaesthesia or in the operating room with regional or general anaesthesia.

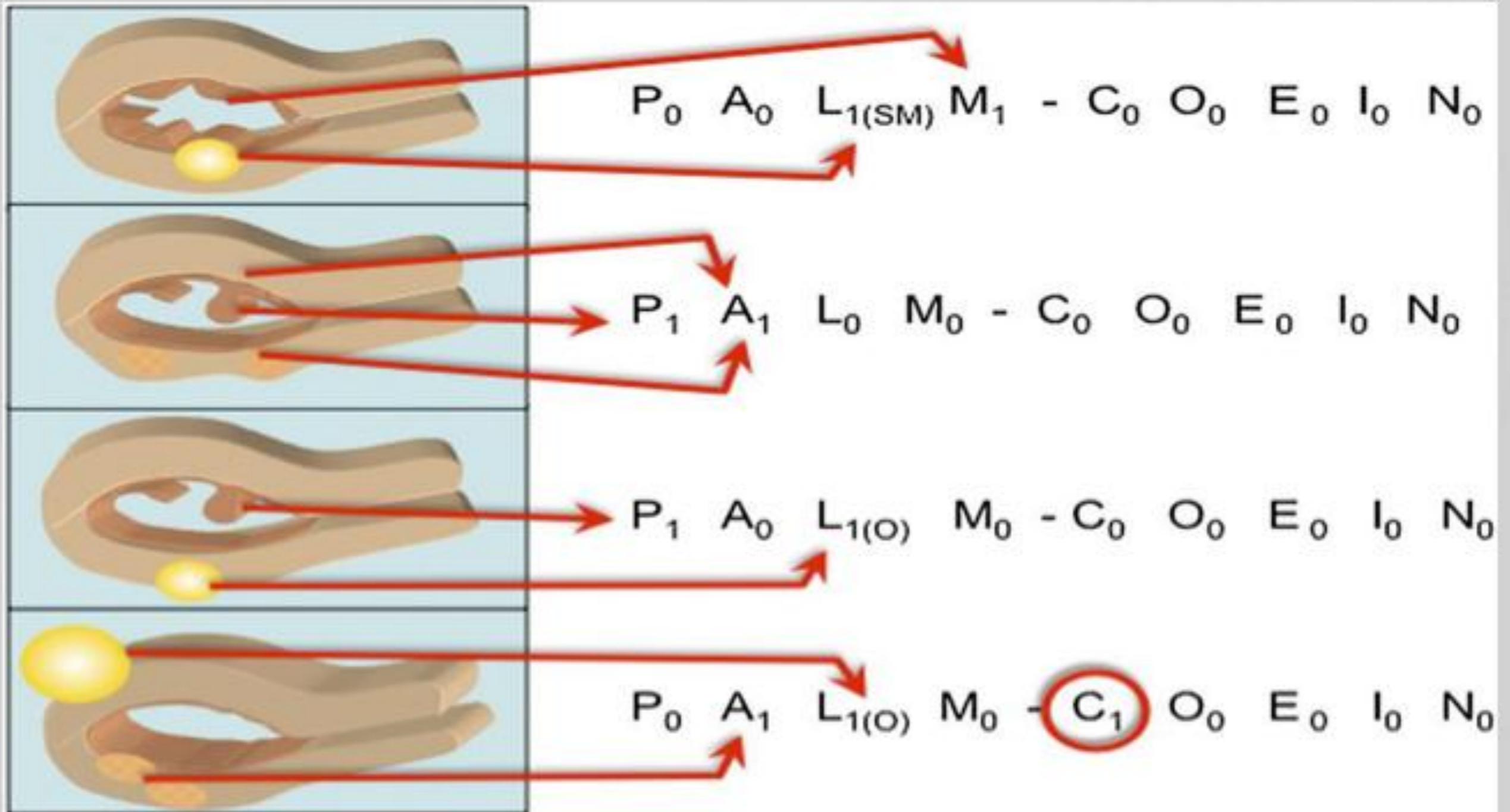
- **Risks of hysteroscopy :**
 - perforation of the uterus
 - infection
 - cervical lacerations
 - creation of false passages
 - fluid overload



Notation for AUB

- A patient may be found to have more than one potential entity contributing to symptoms of AUB.
- For example, if a patient is found to have endometrial hyperplasia and ovulation dysfunction with no other abnormalities, she would be categorized as follows:
 - AUB P₀ A₀ L₀ M₁-C₀ O₁ E₀ I₀ N₀
 - May be abbreviated as : AUB – M,0

Notation for AUB



Summary Work-Up of AUB

Abnormal Uterine Bleeding Classification		Supporting Evidence										
		Present	Absent	Unknown	History	Drug History	Examination	Ultrasound	MRI	Coagulopathy	Hysteroscopy	Histology
Polyps (Endometrial)	AUB-P			X			X					
Adenomyosis	AUB-A			X		X	X					
Leiomyoma/Fibroids	AUB-L(SubMucosal)			X			X					
	AUB-L(Other)			X		X	X					
Malignancy/ Hyperplasia	AUB-M		X		X							
Coagulopathy	AUB-C		X						X			
Ovulatory	AUB-O		X		X							
Endometrial	AUB-E			X	X							
Iatrogenic	AUB-I		X			X						
Not otherwise classified	AUB-N		X		X							

Take Home Message

When a woman presents with **AUB**

.... Consider as a **COIN** in your **PALM**

...Give it a Name (**AUB- PALM COEIN**)

...Support your Dx with relevant **IVTs**

...which will direct **Treatment Options**

Any Qs?

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Thank You