

Abnormal Uterine Bleeding

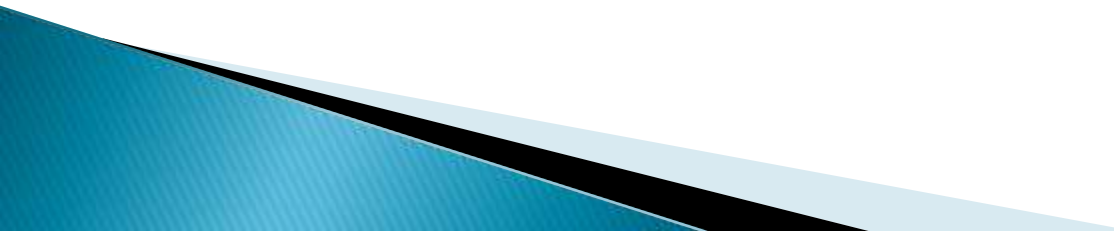
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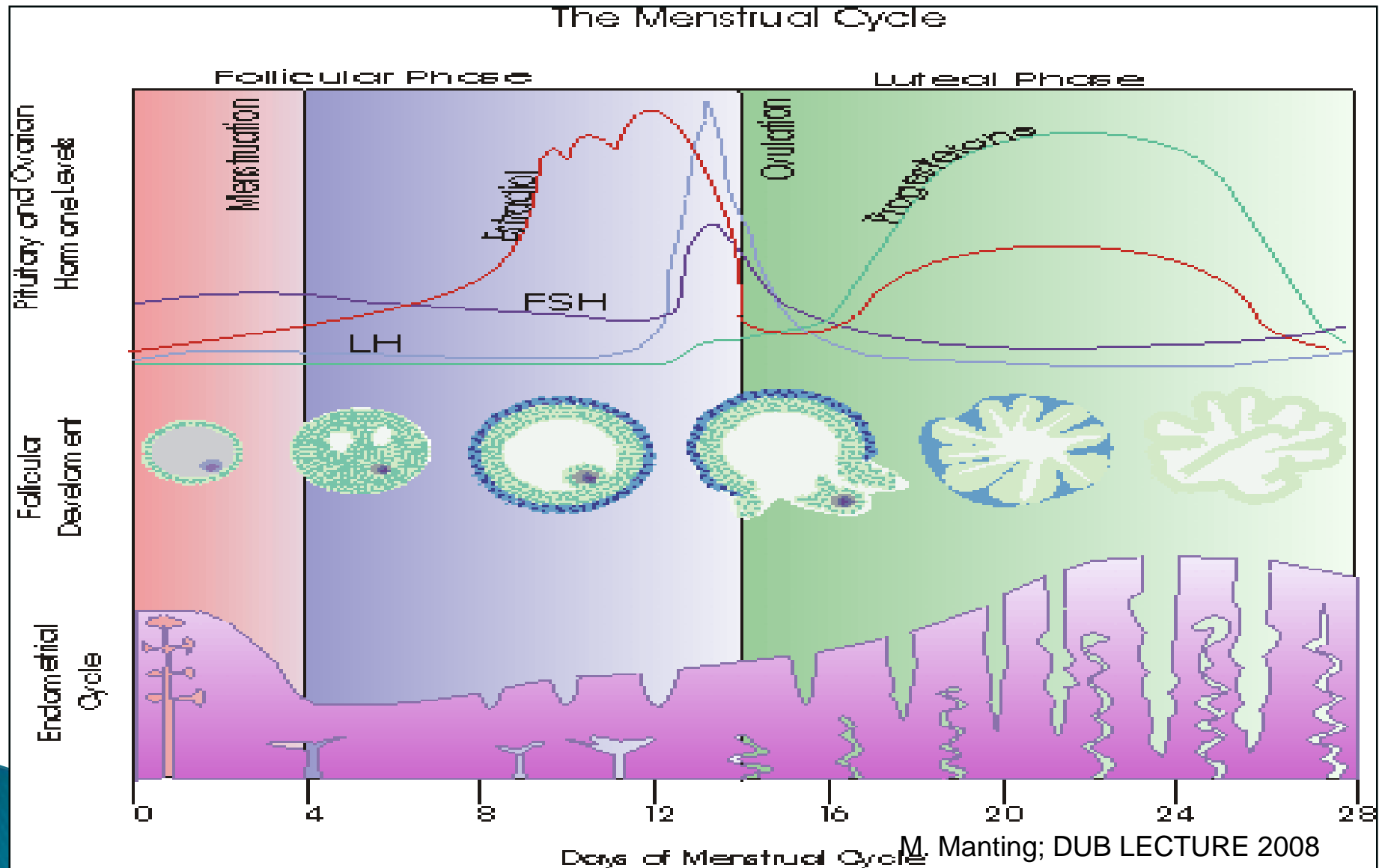
The Normal Menstrual Period

- ▶ Blood loss < 80 ml (average 30–35 ml)
 - ▶ Duration of flow 2–7 days (average 4 days)
 - ▶ Cycle length 21 – 35 days (average 28 days)
- 

Phases of the Menstrual Cycle

- ▶ Follicular
 - Begins with Menses ends with luteinizing (LH) hormone surge
- ▶ Ovulation (30–36 hours)
 - Begins with LH surge and ends with ovulation
- ▶ Luteal (14 days)
 - Begins with the end of the LH surge and ends with onset of menses

The Normal Menstrual Cycle



Cessation of Menses

- ▶ Two main mechanisms:
 - Formation of the platelet plug
 - important in the functional endometrium
 - Prostaglandin dependent vasoconstriction
 - important in the basalis layer

Abnormal Uterine Bleeding (AUB)

- ▶ Definition:
 - Any change in menstrual period as regard:
 - Flow
 - Duration
 - Frequency

Old Terminology

- ▶ Menorrhagia
- ▶ Metrorrhagia
- ▶ Polymenorrhea
- ▶ Dysmenorrhea
- ▶ Amenorrhea
- ▶ Oligomenorrhea
- ▶ Hypomenorrhea

CLINICAL TYPES

Polymenorrhoea: Frequent <21 d menstruation, at regular intervals

Menorrhagia: Excessive & / or prolonged menstruation, at regular intervals

Metrorrhagia: Uterine bleeding occurring at completely irregular but frequent intervals, the amount being variable.

Menometrorrhagia: Excessive & / or prolonged bleeding at irregular intervals.

Intermenstual bleeding: Bleeding of variable amounts occurring between regular menstrual periods.

Hypomenorrhoea: Scanty menstruation.

Oligomenorrhea: Infrequent menstruation >35 d

Amenorrhea: Absence of menses for > 6 months.

Postmenopausal bleeding: Uterine bleeding that occurs more than 1 year after the last menses in a woman with ovarian failure.

Dysfunctional uterine bleeding

Abnormal uterine bleeding in absence of pelvic organ disease or a systemic disorder.

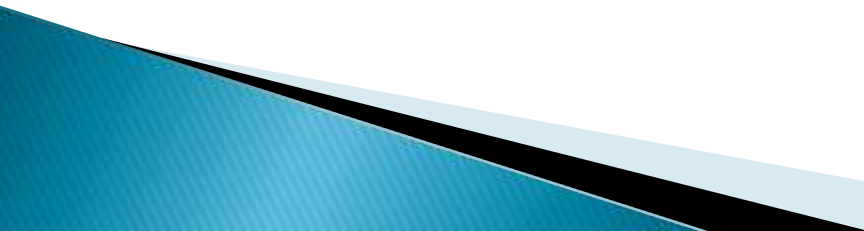
New Terminology

- ▶ *Heavy Menstrual Bleeding*
 - Acute
 - Chronic
- ▶ *Intermenstrual Bleeding*

HMB

- ▶ **Heavy menstrual bleeding (HMB) is defined as excessive menstrual blood loss which interferes with a women's physical , emotional and quality of life**

Etiology Of AUB

- ▶ **Structural:** PALM-COEIN
(Non Gravid Women)
Gravid uterus (Causes of bleeding with pregnancy)
 - ▶ **Life Cycles:** Pre-puberta
Menarchal
Reproductive
Post-Menopause
 - ▶ **Anatomic:** “Bottoms Up”
- 

FIGO Classification of abnormal uterine bleeding (AUB) – PALM COEIN

Structural Causes of HMB (PALM)

- Polyps (endometrial or cervical²)
- Adenomyosis
- Leiomyoma
 - Submucosal
 - Other
- Malignancy and hyperplasia

Nonstructural Causes of HMB (COEIN)

- Coagulopathy
- Ovulatory dysfunction
- Endometrial (primary disorders of the endometrium)
- Iatrogenic
- Not yet classified

Notation

≥1 may be present; notation follows **TNM** cancer staging model.
For example, a patient with polyps and confirmed von Willebrand disease would be classified as **P₁A₀L₀M₀-C₁O₀E₀I₀N₀**



PALM

Structural Causes

P– Polyp (AUB–P)

A– Adenomyosis (AUB–A)

L– Leiomyoma (AUB–L)

 Submucosal myoma (AUB–L_{SM})

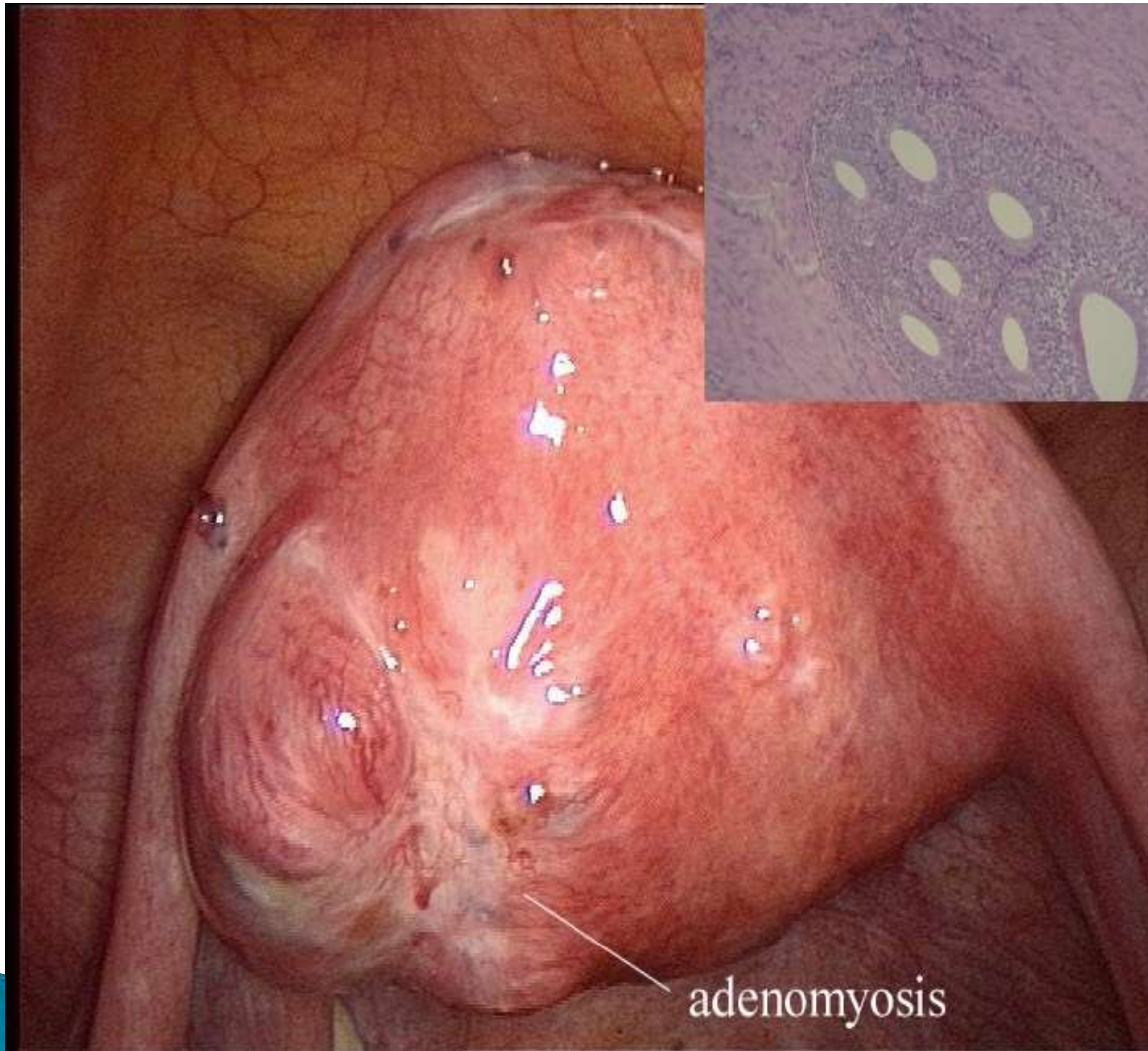
 Other myoma (AUB–L_O)

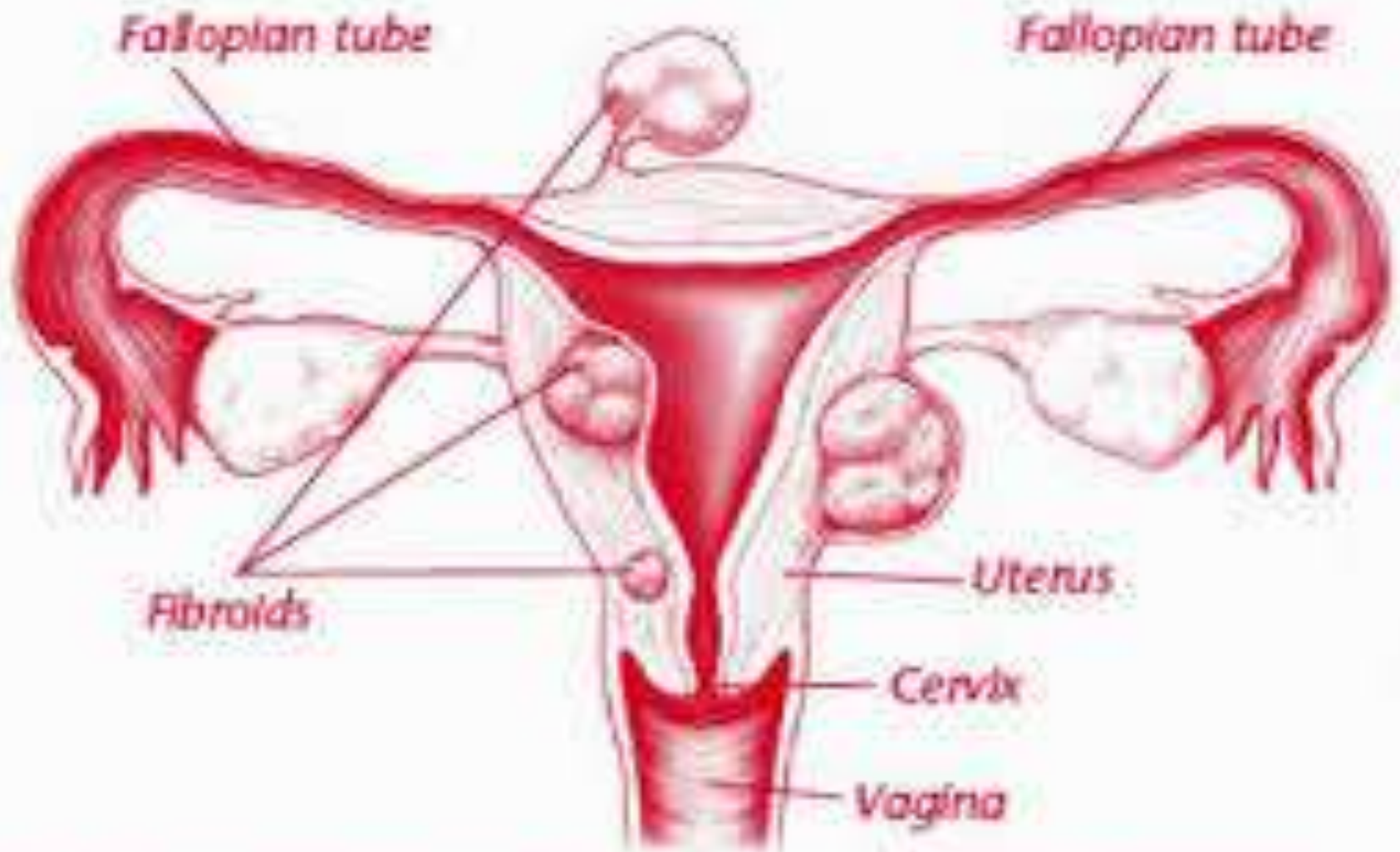
M– Malignancy & hyperplasia (AUB–M)

Polyp



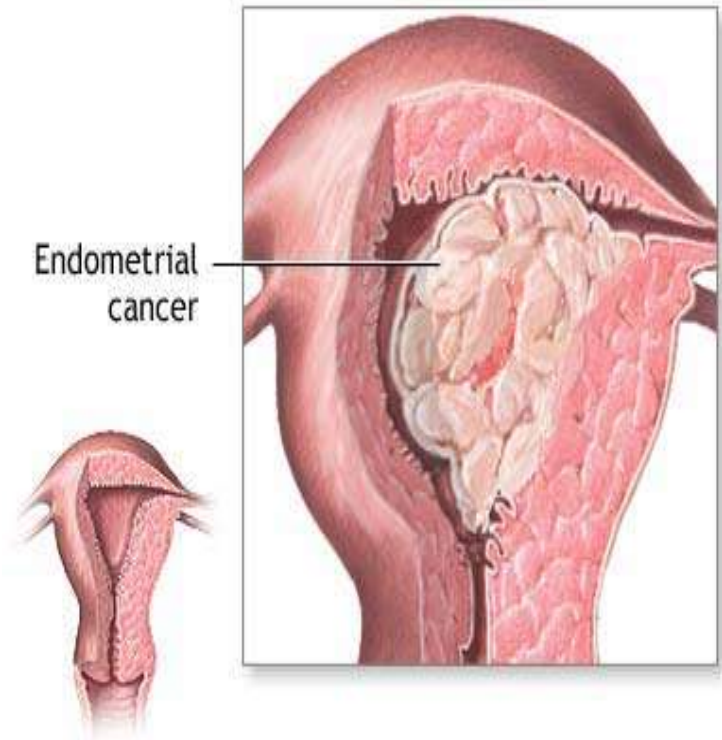
Adenomyosis





A fibroid is a benign growth that may form inside and sometimes outside the uterus.

Endometrial cancer



ADAM.

COEIN

Non-Structural Causes

C– Coagulopathy (AUB–C)

O–Ovulatory dysfunction (AUB–O)

E– Endometrial (AUB–E)

I– Iatrogenic (AUB–I)

N– Not yet classified (AUB–N)

Coagulation Disorders

Coagulation Disorders

Inherited
von Willibrand's
hemophilia

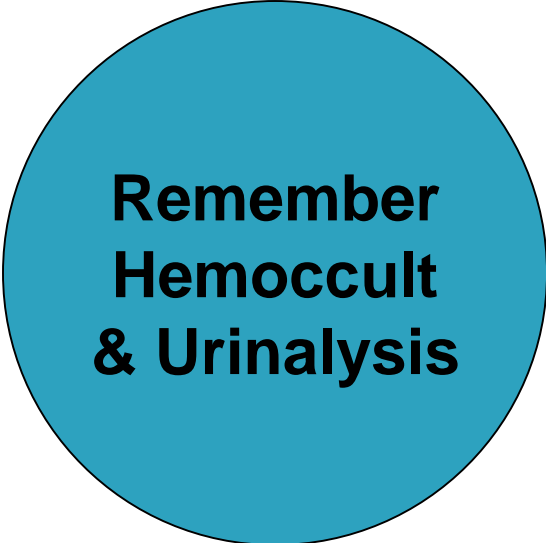
Acquired
ITP
leukemia

Drug Induced
coumadin/heparin
aspirin

**Rule out
von Willebrand's
in any girl who
requires
transfusion for excessive
bleeding
when first
starting periods**

Bleeding from other Sites

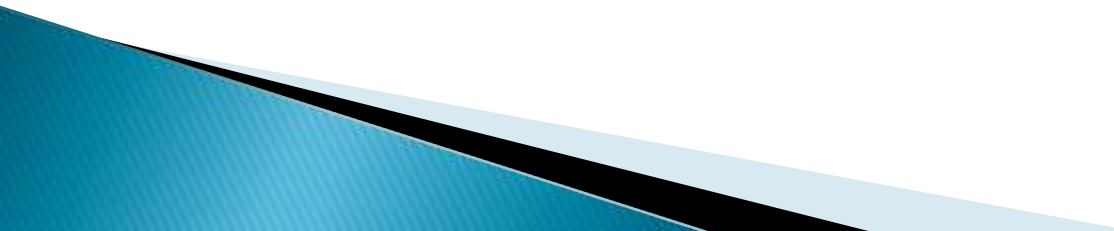
- ▶ **GI**
 - Neoplasia or hemorrhoids
- ▶ **GU**
 - Urethral caruncle or diverticulum
 - Renal lithiasis or hemorrhagic cystitis
- ▶ **GYN**
 - Labia, cervix, or vagina
 - Trauma, infection, or neoplasia



**Remember
Hemoccult
& Urinalysis**

Causes of Anovulation:

Physiologic

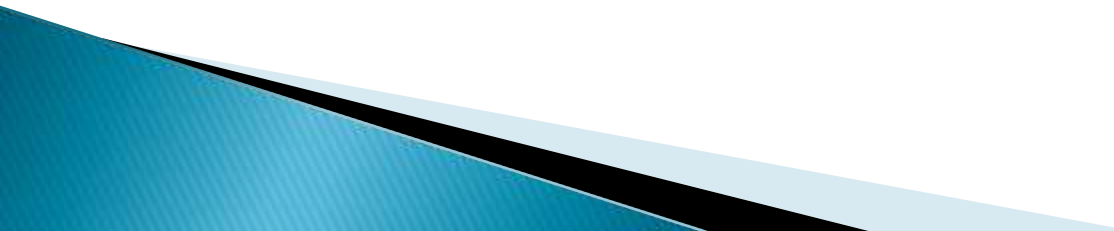
- ▶ Pre –Adolescence
 - ▶ Menopause
 - ▶ Lactation
 - ▶ Pregnancy
- 

Causes of Anovulation

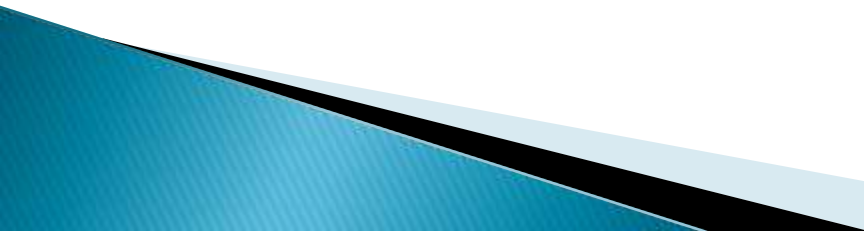
Pathologic

- ❑ *Hyperandrogenic anovulation (e.g., PCOS, CAH, or androgen-producing tumors)*
- ❑ *Hypothalamic dysfunction*
- ❑ *Hyperprolactinemia*
- ▶ *Thyroid disease*
- ▶ *Pituitary disease*
- ▶ *Premature ovarian failure*
- ▶ *Iatrogenic (Chemo)*
- ▶ *Medications*

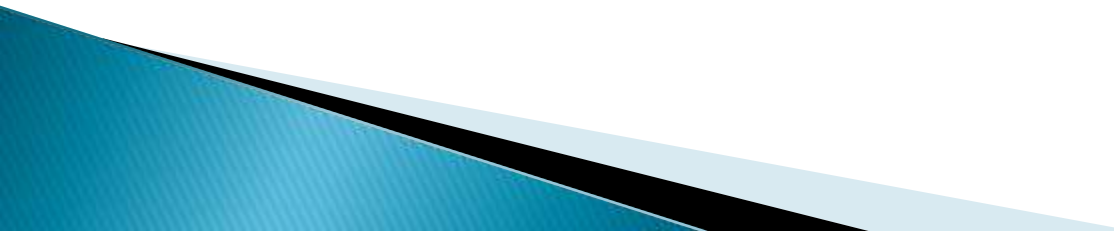
Endometrial causes

- ▶ Disorders of mechanisms regulating local endometrial hemostasis.
 - ▶ Endometrial inflammation
 - ▶ Endometrial infection
 - ▶ Abnormalities in the local endometrial vasculogenesis
- 

Etiology Of AUB

- ▶ **Structural:** PALM-COEIN
(Non Gravid Women)
Gravid uterus (Causes of bleeding with pregnancy)
 - ▶ **Life Cycles:** Pre-puberta
Menarchal
Reproductive
Post-Menopause
 - ▶ **Anatomic:** “Bottoms Up”
- 

Etiology of AUB: Life Cycles

- ▶ Pre-pubertal
 - ▶ Menarchal
 - ▶ Reproductive
 - ▶ Postmenopausal
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Etiology of AUB Life Cycles Approach

Prepubertal

Menarche

Reproductive

Post-Menopausal

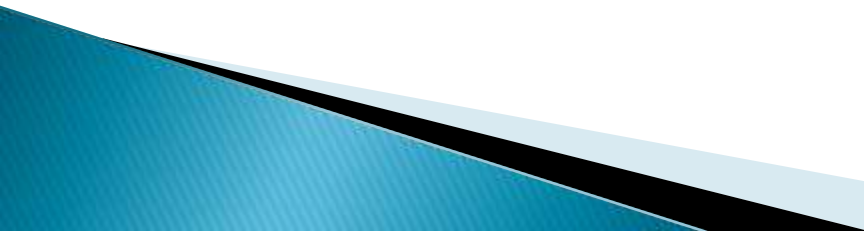
- E2 withdrawal @birth
- Foreign Body
 - Sarcoma
 - Ovarian Tumor
 - Trauma

- Coagulation Defects
- Hypothalamic Immaturity
- Psychogenic

- Pregnancy
- Anovulation
- Anatomic

- Carcinoma
- Vaginal Atrophy
- E2 Replacement
- Anatomic

Etiology Of AUB

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Reproductive
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- 

Etiology of AUB: Anatomic

- ▶ “Bottoms Up”
 - Vulva
 - Vagina
 - Cervix
 - Uterus
 - Ovary

Vulvar

- ▶ Infections
- ▶ HPV
- ▶ Atrophy
- ▶ Benign Lesions
- ▶ Cancerous lesions
- ▶ Dermatologic Causes

PHYSICAL EXAM: INSPECTION IS IMPORTANT

Vagina

- ▶ Malignancy :
 - Carcinoma
 - Sarcoma
- ▶ Infections
- ▶ Foreign bodies
 - Diaphragm
 - Pessary
- ▶ Laceration/trauma
- ▶ Atrophic changes
- ▶ Granulomatous tissue
 - formed after surgery
 - post hysterectomy

Physical Exam: Inspection is important

Cervix

- ▶ Neoplasia
 - Cancer
 - Polyps
 - Myomas
- ▶ Cervical Eversion (Ectropion)
- ▶ Infection
 - Cervicitis
 - Condyloma Acuminata

IMPORTANT:
Visualize the Cervix!

Uterus

- ▶ Myomas
- ▶ Polyps
- ▶ Endometrial Hyperplasia
- ▶ Endometrial Carcinoma
- ▶ Atrophy

Postmenopausal Bleeding is considered endometrial cancer until proven otherwise

Postmenopausal bleeding is evaluated by an Endometrial biopsy

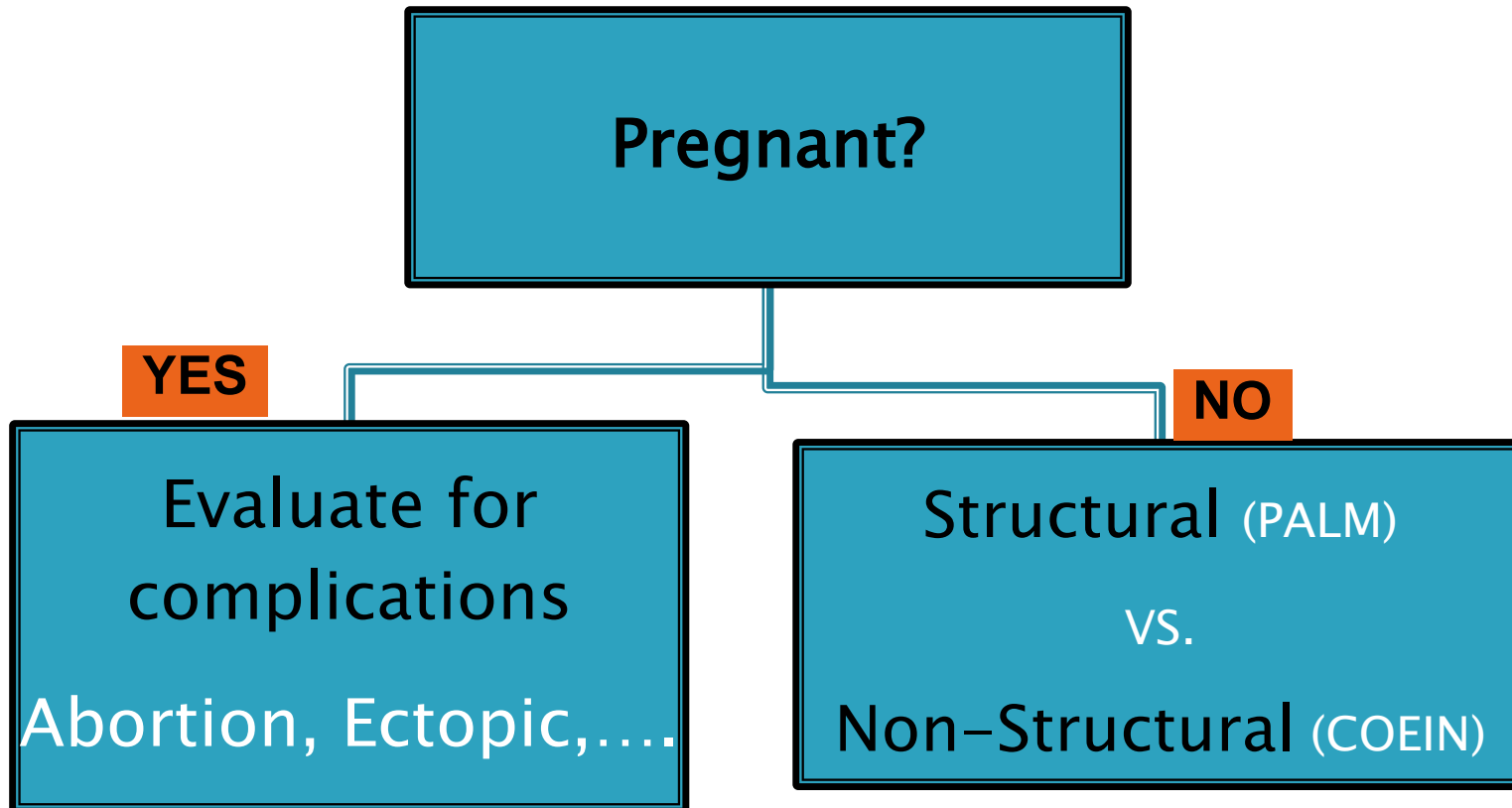
Most PMB Is due to Atrophy

PHYSICAL EXAM: Bimanual Exam checks enlargement


Ovary

- ▶ Anovulation
- ▶ PCOS
- ▶ Menopause Transition

EVALUATION OF AUB



I–Taking the History

- ▶ Onset, frequency, duration, cyclic vs. acyclic
Severity
 - ▶ Pain, change from menstrual pattern (calendar)
 - ▶ Age, parity, marital status, sexual hx, contraception
 - ▶ medications, dates of pregnancies
symptoms of pregnancy and reproductive tract disease
 - ▶ Family history
- 

II. Examination:

1. General:

pallor, endocrinopathy, coagulopathy, pregnancy

2. Abdominal:

liver, spleen, pelvi abdominal mass

3. Pelvic:

origin of the bleeding, cause

III–Investigations

- ▶ CBC
- ▶ Urine or serum pregnancy test
- ▶ Coagulation profile
 - PT, PTT, and bleeding time.
- ▶ Hormonal assay
 - LH, FSH, TSH , testosterone, androstenedione, basal 17–hydroxyprogesterone (17–HP)

III–Investigations

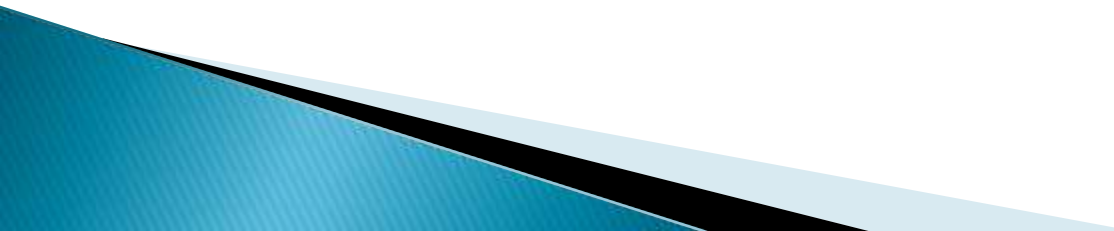
- ▶ **Evaluation of the Endometrium**
 - Endometrial Biopsy
 - Transvaginal &/or abdominal Ultrasound (TVS/AUS)
 - Saline Sono–hysteroscopy (SIS)
 - Hysteroscopy
 - MRI

Sonohysterography

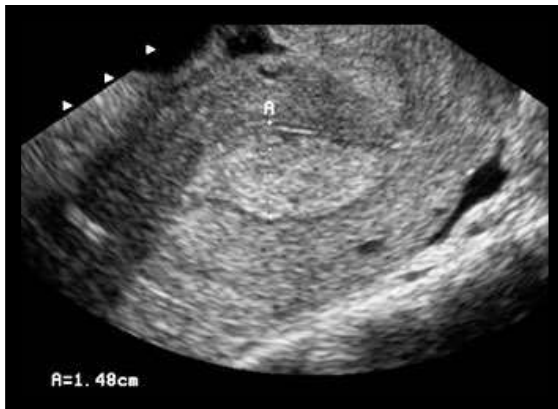


**Sonohysterography
polyps**

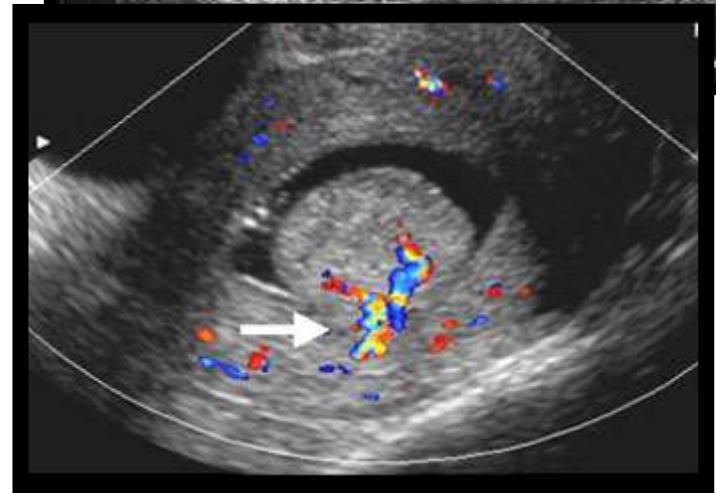
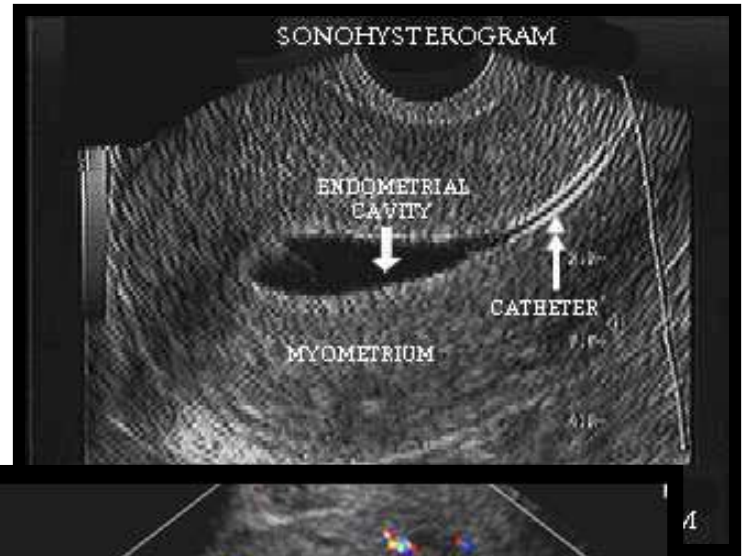
Transvaginal Ultrasound

- ▶ To assess for thickened endometrium
 - ▶ In 92% of abnormal endometrial biopsies, ultrasound showed $>5\text{mm}$ endometrium
 - ▶ In 96% of endometrial cancer by biopsy result, ultrasound showed $>5\text{mm}$ endometrium
 - ▶ Therefore, ultrasound measured endometrium $<5\text{mm}$ is likely benign uterine condition
- 

TVS & SIS



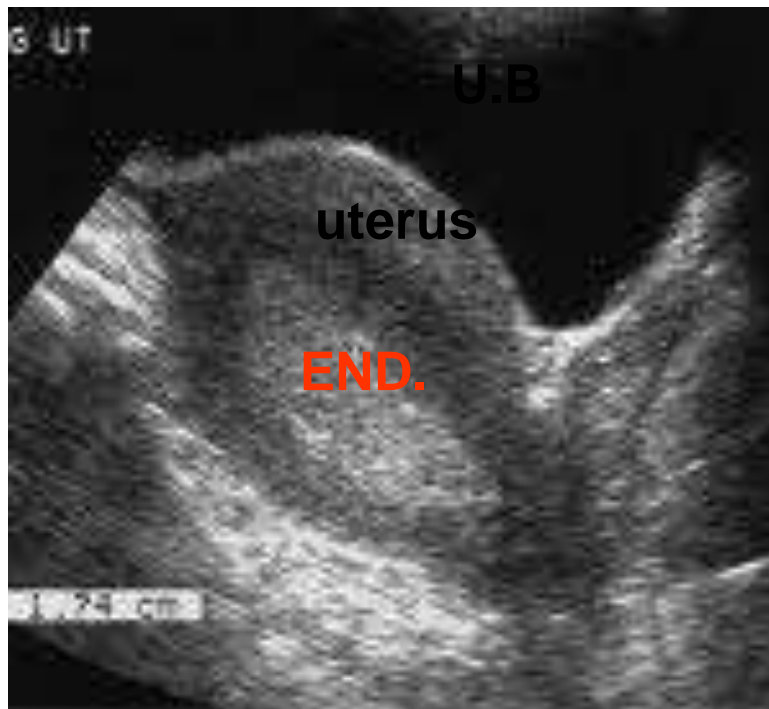
TVS



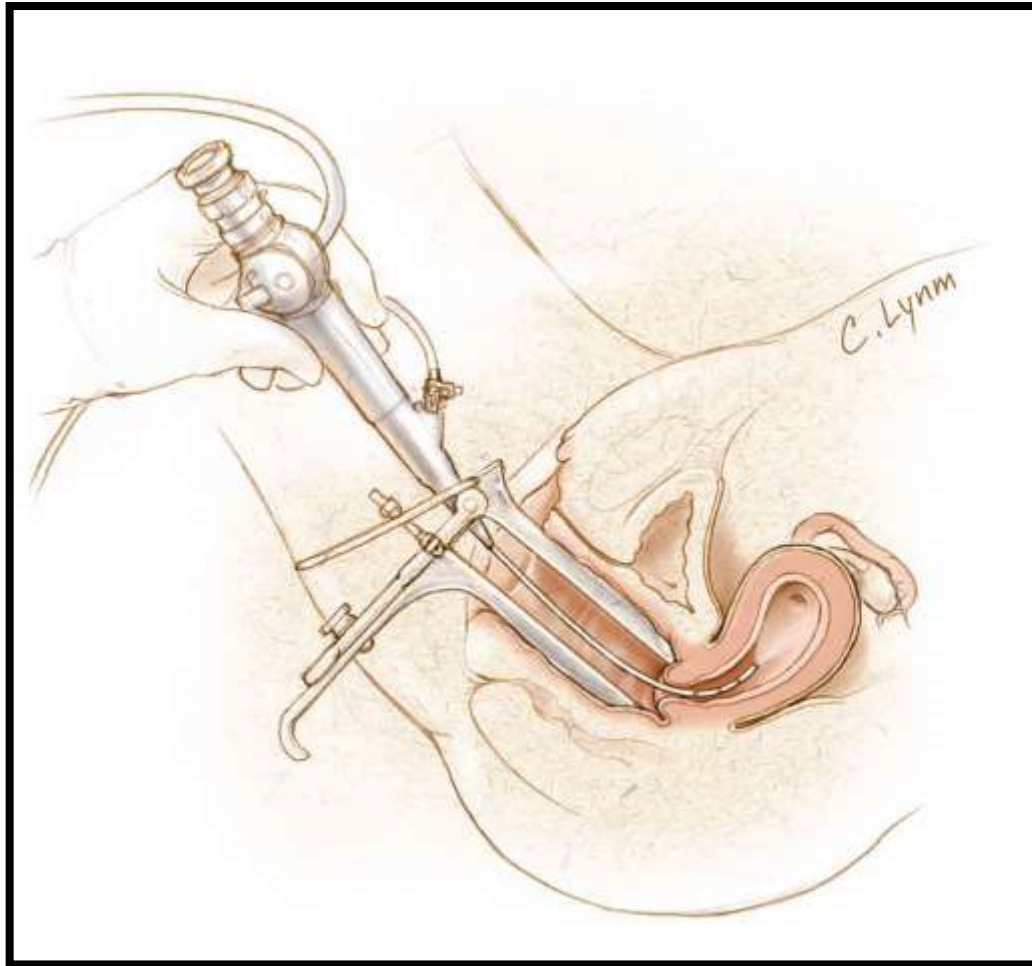
SIS

Ultrasonography:

- 1. TAS:** can exclude pelvic masses, pregnancy complications
- 2. TVS:** Measurement of the endometrial thickness. All endometrial carcinoma in postmenopausal with endometrial thickness >4 mm

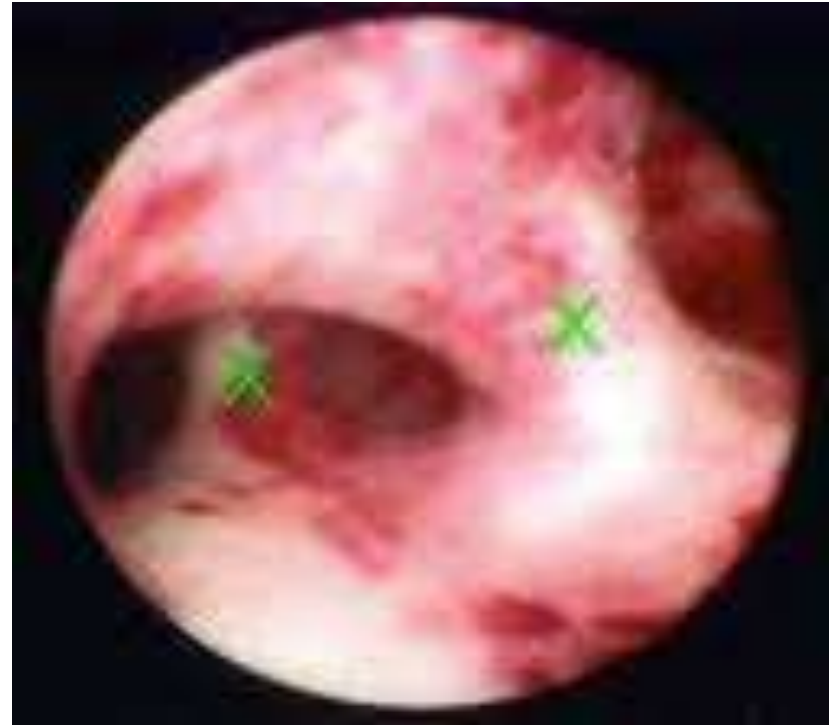


Hysteroscopy





**Hysteroscopy
polyp**



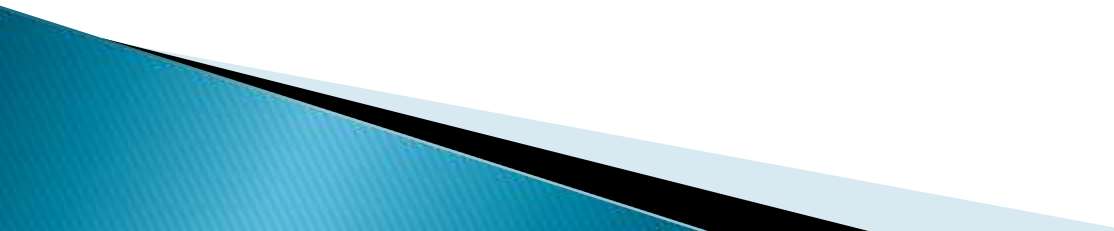
Uterine synechia

MRI

- ▶ Precisely localizes sub-mucosal fibroids
- ▶ Detect Adenomyosis
- ▶ MRI is not superior to TVS & SIS in overall diagnostic potential

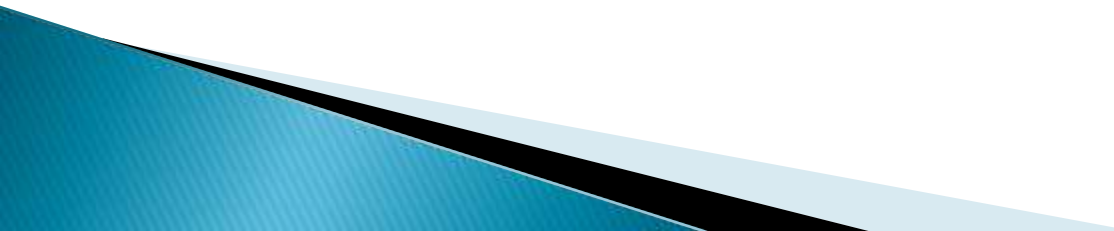
Dueholm M, et al. *Fertil Steril.* 2001;76(2):350357

Treatment of AUB

- ▶ General measures
 - ▶ Medical
 - ▶ Minimally invasive surgery
 - ▶ Major surgery
- 

Treatment

A. General

- 1-Bed rest till arrest of bleeding**
 - 2-Tonics and vitamins to correct anemia**
 - 3- Blood transfusion.**
 - 4- Treatment of the cause eg: Hypertension , Thyroid dis.**
- 

Medical Management

▶ *Non-Hormonal*

- Anti-fibrinolytics
- Coagulants
- Venotonics
- NSAIDS

▶ *Hormonal*

- Progestins
- Estrogen
- Estrogen + progestins (OCP)
- Androgens
- GnRH agonists
- Anti-progestational agents

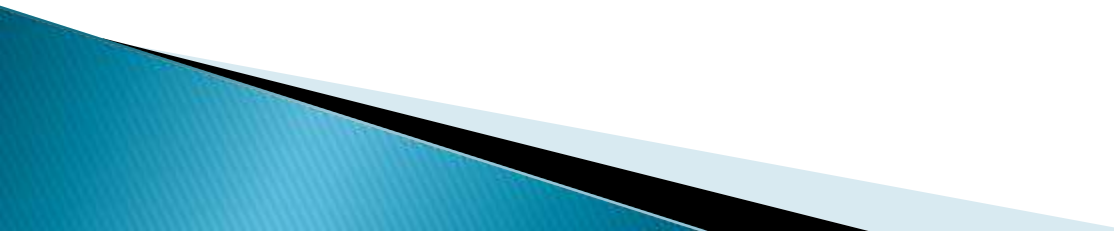
I. *Hormonal:*

1. Progestagen eg: Norethisterone (Primulot-N) or norethisterone acetate (Primulot-Nor)
2. Oestrogen in threshold bleeding
3. COCs 1- 4 pills/d.. bleeding stopped ...1 pill for 21 days
4. Danazol 400 mg/d.
5. GnRH agonist 200 - 400 microgram nasal spray / d.
6. Levo-nova (Merina)

II. *Non –hormonal*

1. Prostaglandin synthetase inhibitors (NSAIDs) eg: mefenamic acid ,naproxen, Ibupufen
2. Antifibrinolytics eg: Tranexamic acid (**Cyclokapron**)
3. Coagulants(**Dicynone**)
- 4- Venotonics (**Daflon**)

Minimally Invasive Surgery

- ▶ Intrauterine Device (IUD) with progesterone
 - ▶ Dilation & Curettage
 - ▶ Endometrial Ablation
- 



MIRENA SYSTEM

Endometrial ablation

Methods:

I. Hysteroscopic:

1. Laser
2. Electrosurgical:
 - a. Roller ball
 - b. Loop resection

II. Non-hysteroscopic:

1. Thermal Balloon
2. Microwave.

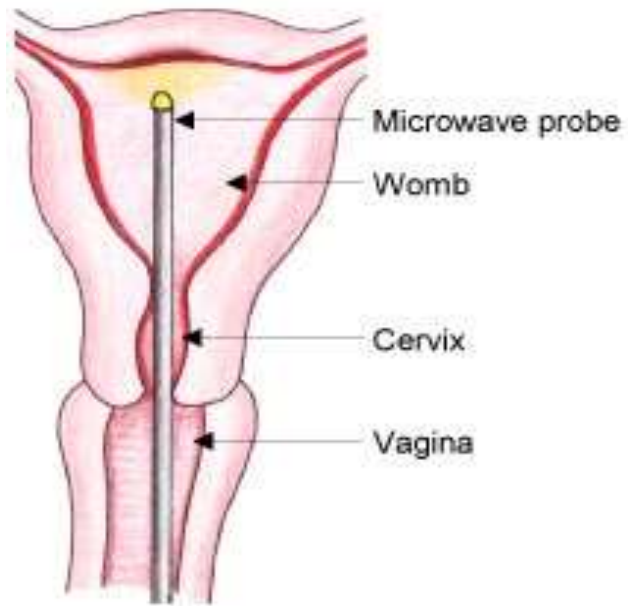
Endometrial ablation



Thermal balloon ablation



Loop resection



Microwave ablation

Major Surgery

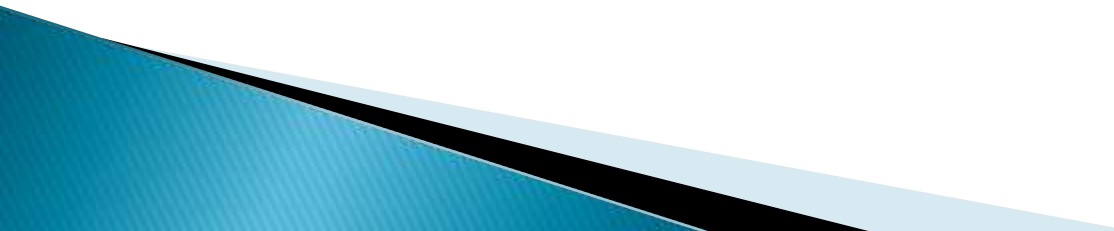
- ▶ Myomectomy
- ▶ Hysterectomy

Hysterectomy

Indications:

1. Failure of medical treatment
2. Family is completed

Routes:

1. Abdominal
 2. Vaginal
 3. Laparoscopic
- 

Management of Acute AUB

- ▶ Can be a life-threatening emergency
 - Monitor Vital signs, Start oxygen
 - IV fluids (wide bore IV catheter)
 - Type and Cross 2–4 units of blood
- ▶ IV Estrogen
- ▶ IM Progesterone
- ▶ NSAIDS (Anti-prostaglandins vs. Anti-fibrinolytics)
- ▶ Emergency Dilatation and Curettage (D&C)