A woman with dark, curly hair is shown from the chest up, looking directly at the camera with a serious expression. The background is a blurred office or library setting with bookshelves. The image has a dark, semi-transparent overlay. A thin white line starts from the left edge, curves around the top left of the text, and then extends diagonally across the text area. There are also some faint white geometric shapes on the right side of the text.

**Vaginal bleeding**  
**The most important vital sign!**  
**(In an ob-gyn's opinion)**

Jokes about menstrual cycles  
are not funny.

Period.



som<sup>ee</sup>cards  
user card

# Learning objectives

- Review the physiology and evolution of a “normal” menstrual cycle
- Discuss common pathology associated with abnormal bleeding
- Outline the evaluation of abnormal bleeding
- Educate regarding possible treatments and solutions for pathology

# References



ACOG PB #128- Diagnosis of AUB in reproductive age women

ACOG CO #557- Management of acute AUB in non-reproductive age women

ACOG PB#136- Management of AUB associated with ovulatory dysfunction

ACOG CO #785- Screening and management of bleeding disorders in adolescents with AUB

ACOG CO #734- Utility of ultrasonography in evaluating AUB

ACOG PB #81- Endometrial ablation

ACOG PB# 672- Prepregnancy evaluation

Clinical updates in Women's health- PCOS

ACOG CO #678- Premature ovarian failure

ACOG PB #141- Management of menopause

# You may need an ob-gyn if...

- You aren't having ANY periods
- You have painful, heavy, long or unpredictable periods
- You want to get pregnant and you have irregular periods
- Your hormones are changing or "off"
- You're going through menopause
- ANY vaginal bleeding after menopause

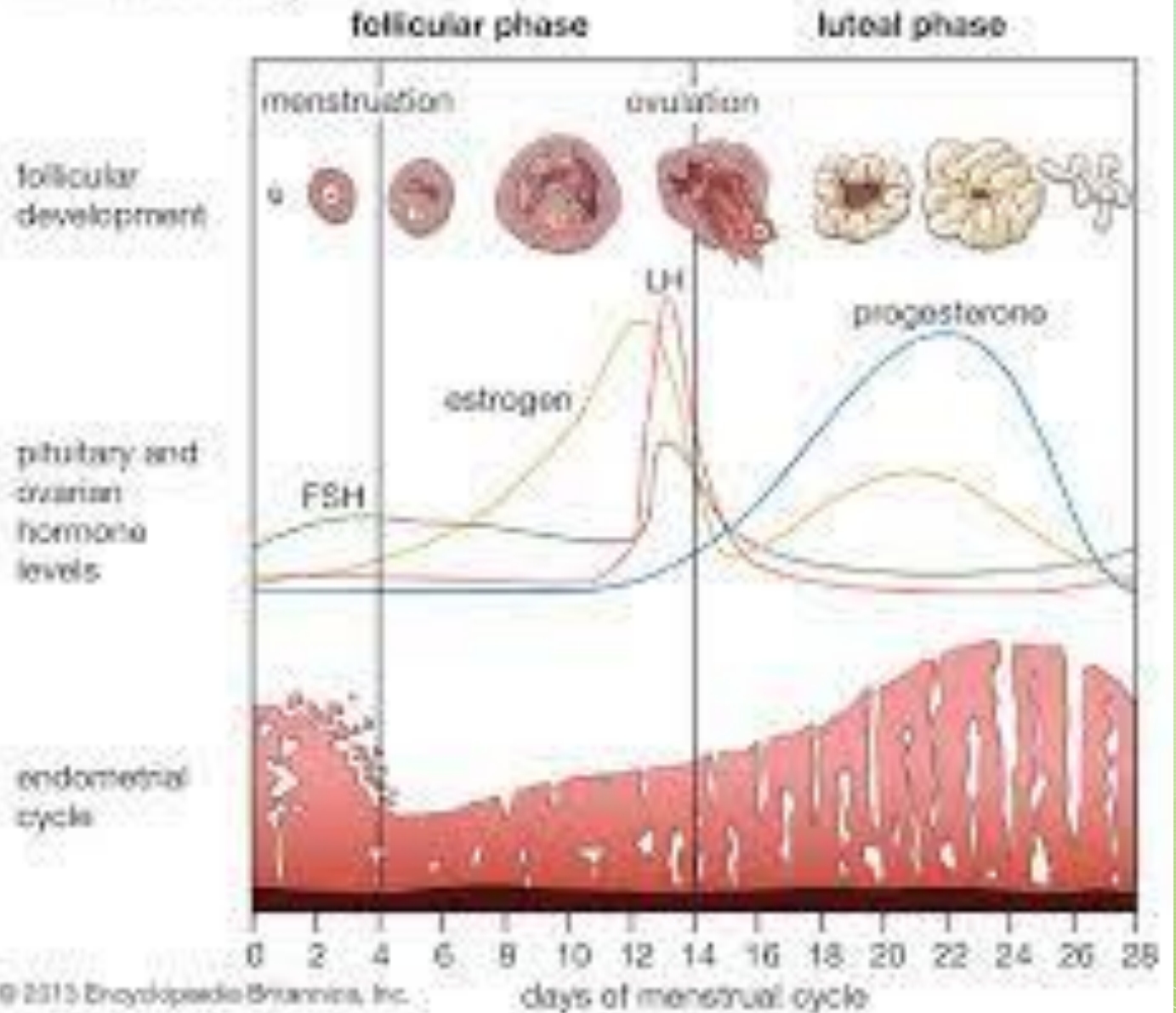




▼ The menstrual  
cycle

# The menstrual cycle

## The menstrual cycle



# The menstrual cycle

- Estrogen
  - Proliferation of the endometrium
- Progesterone
  - Limits further endometrial growth
  - Induces menses via ischemia and sloughing
  - Limits menses by vasoconstriction and myometrial contractions
- Estrogen rises again
  - Rebuild new endometrium to stop the process





# The menstrual cycle

- Normal cycle
  - 21-35 days from 1<sup>st</sup> day bleeding to 1<sup>st</sup> day bleeding
  - 4-7 days of bleeding
  - <80mL of blood loss
  - Anything else= AUB or abnormal uterine bleeding





# Evolution of menstruation

- Menarche (first menses) +/- 12.8yo
- Menopause (12 months= no menses) +/- 51yo



▼ Abnormalities of  
menstrual  
development

## Abnormalities in menstrual development

- Immaturity of hypothalamic-pituitary axis
- Delayed pubertal development
- Precocious puberty

# Abnormalities in menstrual development

- MOST common
  - Dysregulation of hormones from hypothalamus-pituitary-ovaries= immaturity of HPA
  - Irregular, sometimes painful or heavy menses
  - Can be weight dependent (worse if low BMI or obesity)
  - Not dangerous, resolves within 18 months

# Abnormalities in menstrual development

- Precocious puberty
  - Early development of HPA axis (not necessarily menstrual bleeding)
  - Evaluation IF:
    - <6yo with breast development OR pubic hair
    - <8yo with breast development AND pubic hair
  - Causes: early activation of H-P axis, central pathology, ovarian tumors, syndromes, adrenal diseases, exogenous exposure to hormones

# Abnormalities in menstrual development


- Delayed pubertal development AKA primary amenorrhea
  - No menses by age 15 BUT secondary sex characteristics are present
  - No menses by age 13 BUT NO secondary sex characteristics are present
  - Causes: constitutional delay, central (thyroid, masses, weight, stress), ovarian failure, genetic and congenital causes



# Patient AA

- 14yo G0
- Irregular and heavy menstrual cycles, occurring q3-4 months with cramping
- Menarche was age 13 with appropriate secondary sex characteristics
- Otherwise healthy, no medications, surgeries
- Reassurance, medical management with COC to regulate menses if desired
  - Concerns regarding COC in adolescents





▼ Abnormal uterine  
bleeding

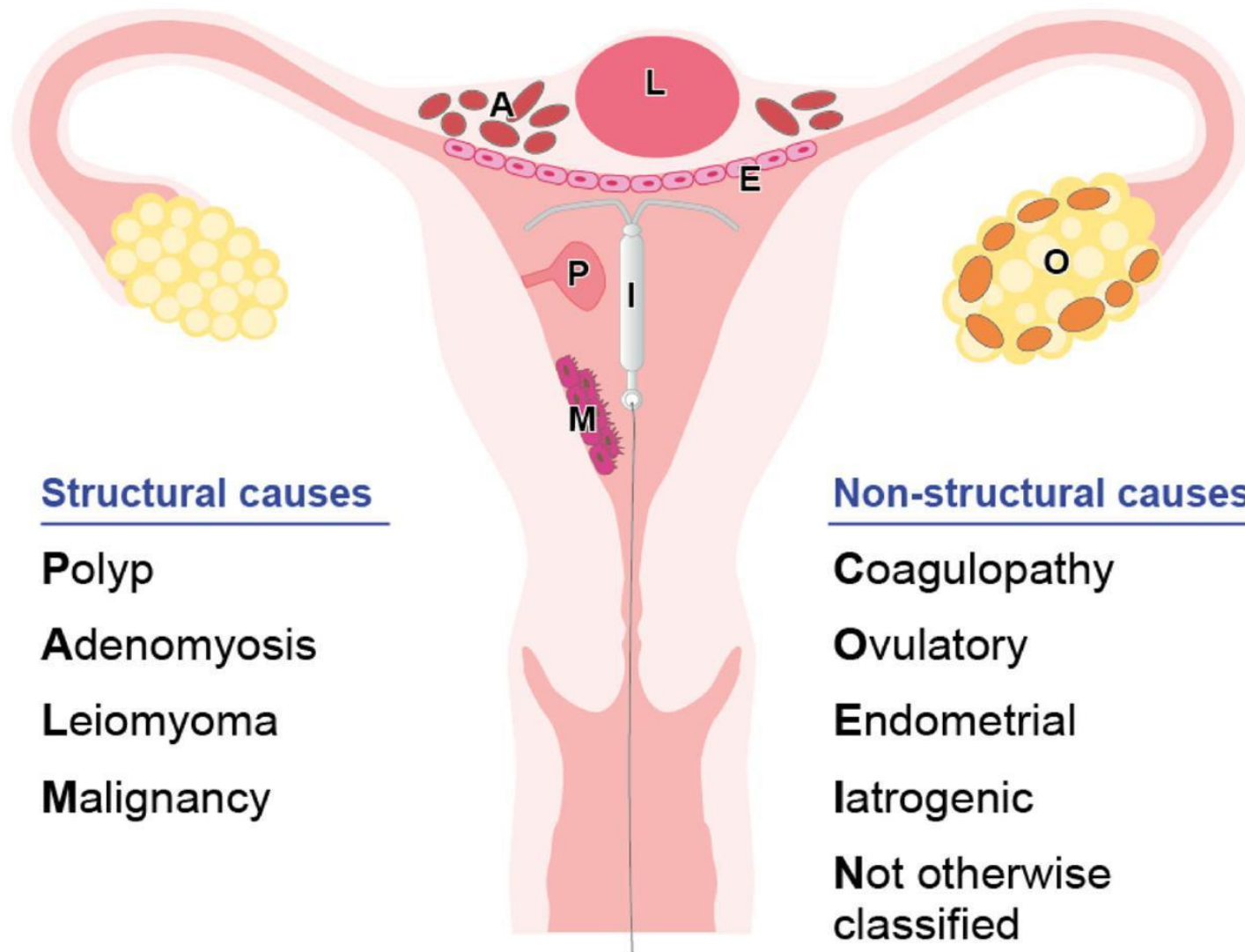
# Abnormal uterine bleeding

- Any kind of bleeding that falls outside of “normal”
  - 21-35 days from 1<sup>st</sup> day bleeding to 1<sup>st</sup> day bleeding
  - 4-7 days of bleeding
  - <80mL of blood loss
- Heavy, frequent, prolonged, infrequent, light
- Quality changes ie. pain



# Abnormal uterine bleeding

- Old diagnostics: no longer used!
  - Dysmenorrhea, menorrhagia, metorrhagia, menometorrhagia, dysfunctional uterine bleeding
- PALM-COIEN



Structural causes

- Polyp**
- Adenomyosis**
- Leiomyoma**
- Malignancy**

Non-structural causes

- Coagulopathy**
- Ovulatory**
- Endometrial**
- Iatrogenic**
- Not otherwise classified**

## Age Based DDX AUB

13-18 years	19-39 years	40 years -menopause
Anovulation (Immature HPO axis)	Anovulation (PCOS)	Anovulation (peri-menopause)
Coagulopathy	Polyps, leiomyoma	Endometrial atrophy
Pregnancy	Pregnancy	Endometrial Hyperplasia
Pelvic infection	Hormonal contraceptives	Endometrial Cancer
Hormonal contraceptives	Endometrial hyperplasia	Leiomyomas
Tumor	Tumor	



# Patient BB

- Menstrual concerns
- 45yo G3P3, 3 SVD, otherwise healthy-no medications or surgical history
- Bleeding q14 days, lasting 5-7 days that is heavy and painful
- Changing protection q10m to 2 hours + cramping
- Previously normal- q30 day menses with 5 days bleeding
- Exam: BMI 28, enlarged but mobile and tender uterus, no adnexal masses
- What to do?



# Patient BB

- Evaluation:
  - Pregnancy test, CBC, TSH, infection screening
  - Ultrasound
  - Endometrial biopsy, cervical evaluation
- Biopsy is negative, labs negative, US enlarged uterus 15cm, 3 (2-6cm fibroids)
- Treatment options?



# Patient BB

- Do nothing
- Medical therapies
- Surgical therapies





# ▼ Evaluation of AUB



# Evaluation for AUB

- Refer to gynecology
- Evaluation is important to exclude dangerous etiology
  - Identify risks for progression/worsening
  - Infertility
  - Anemia
  - Malignancy

# Evaluation of AUB

- History, focused physical exam
  - Endometrial biopsy
  - Pap smear
  - Pelvic exam and cultures/infection screenings (other sources of bleeding, outside menstrual/uterine)
- Imaging
  - Ultrasound most common
  - MRI or CT



(a)



(b)



# Evaluation of AUB

- Lab evaluation
  - Differs based upon bleeding patterns/history
  - Heavy bleeding: TSH, CBC
  - Lack of bleeding: TSH, prolactin, primary ovarian insufficiency
  - Irregular bleeding: PCOS work-up, infertility
    - Testosterone, adrenal causes
  - Routine 'hormone' testing



▼ Treatment options  
for AUB

# Medical treatments for AUB

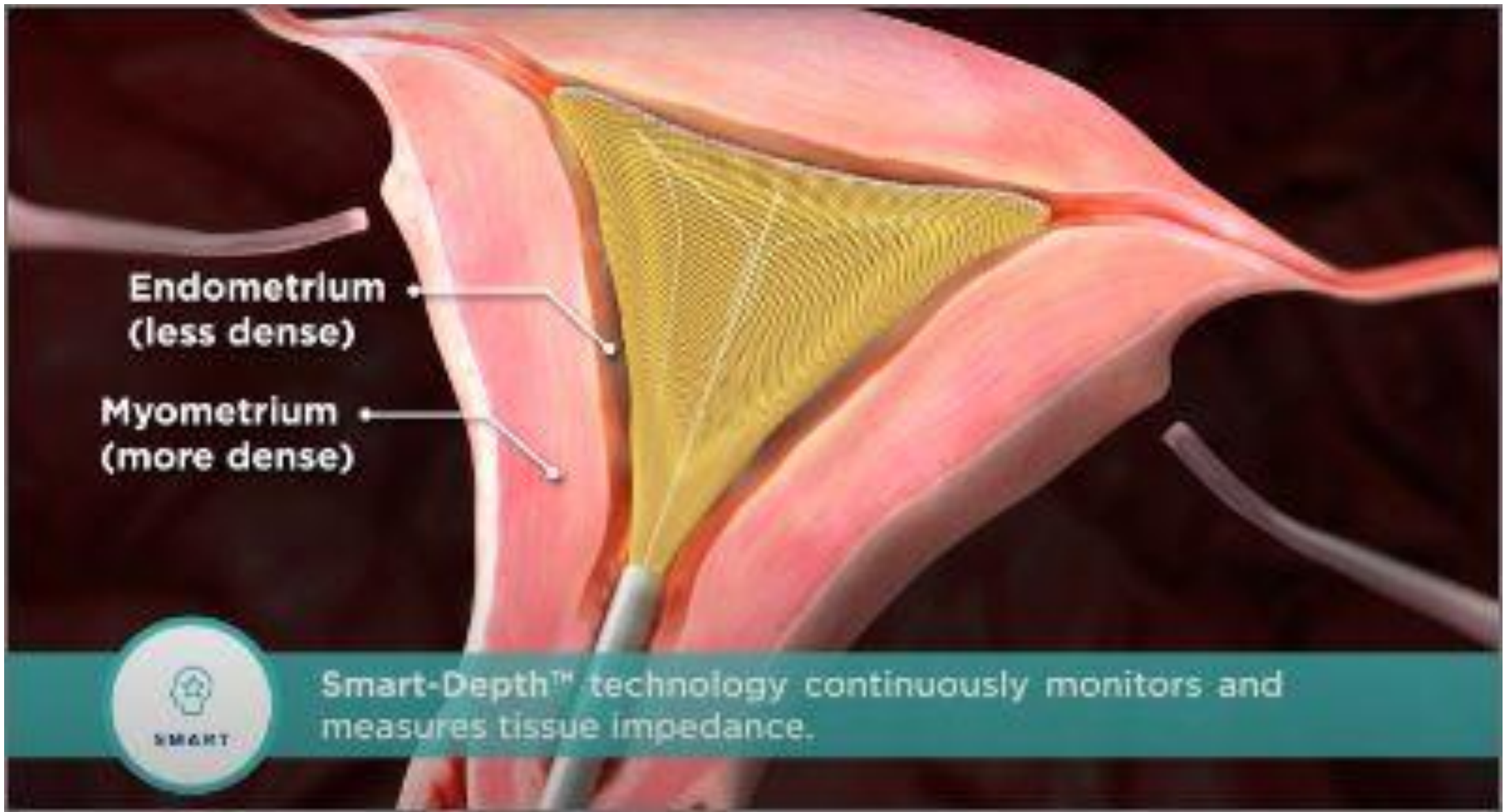
- Combined hormonal contraceptive- COC (pills), patch, vaginal ring
- Progesterone only methods- pills, injections, implant, IUD
- Scheduled NSAIDs
- Tranexamic acid





# Endometrial ablation

- Different types of ablation
- Novasure: Radiofrequency ablative procedure to endometrium
- Hyperplasia/malignancy must be ruled out, considerations for fibroids and adenomyosis
- Pregnancy is contraindicated (effective contraception!)
- 90% satisfaction, 35% amenorrhea, lasts 3-7yr
- Clinic or OR procedure



Endometrium  
(less dense)

Myometrium  
(more dense)

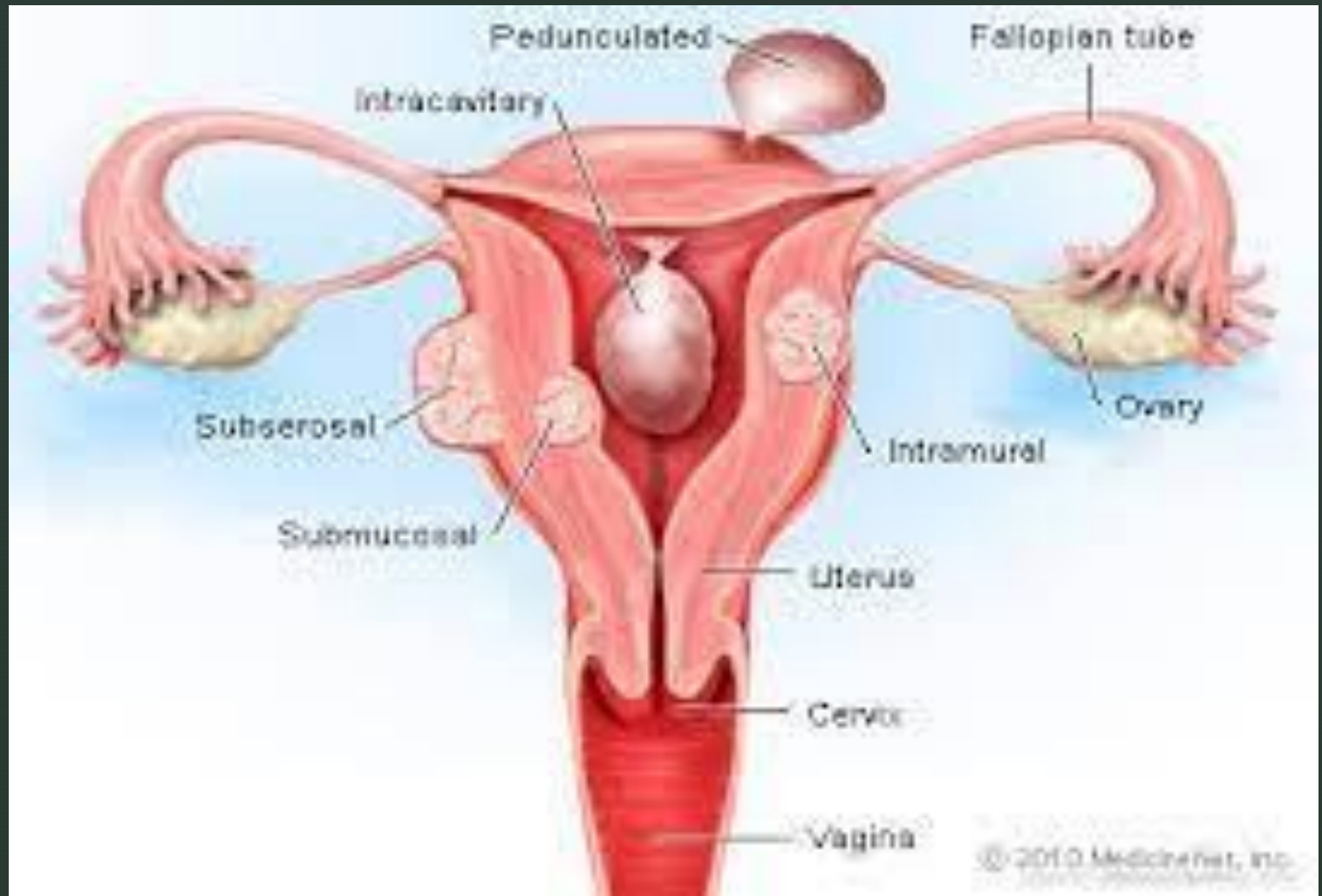


Smart-Depth™ technology continuously monitors and measures tissue impedance.



# Surgical treatment for AUB

- Hysteroscopy
  - Removal of structural abnormalities, sampling
  - Fibroids, polyps, thickened endometrium





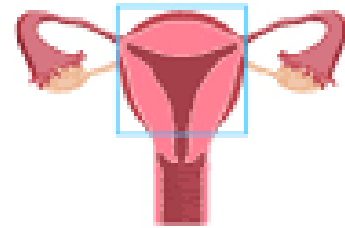
# Surgical treatment for AUB

- Myomectomy
  - Robotic, laparoscopic, hysteroscopic, laparotomy
  - Desire childbearing

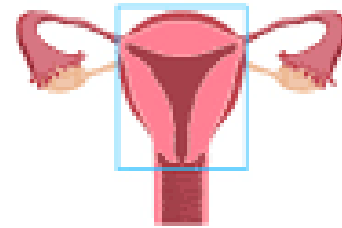
# Surgical treatment for AUB

- Hysterectomy
  - Definitive
    - Bleeding stops, but hormone changes dependent on ovarian management
    - Salpingectomy
  - Vaginal, robotic, laparoscopic, laparotomy
  - Most surgical risk, completed childbearing, recovery

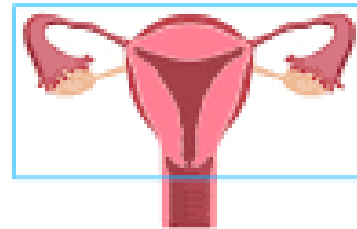
## Types of Hysterectomy



Partial



Total



Radical

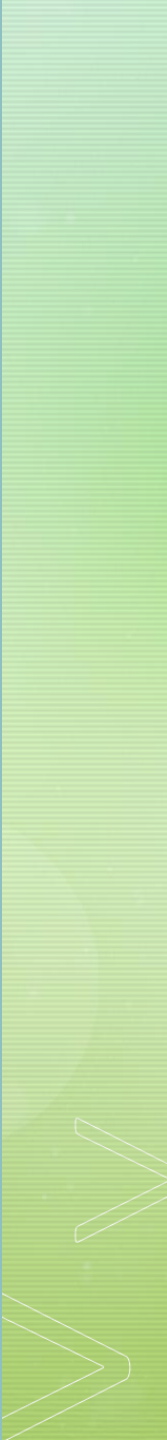


▼ Perimenopause  
and menopause





# Perimenopause


- AKA menopausal transition
  - Begins on average, 4 years prior to lack of menses
  - Irregular menstrual cycles, endocrine changes and symptom changes
  - Physiologic but bothersome!
  - Symptoms can include: weight/metabolic changes, GI habits, mood, vasomotor, vaginal, libido alterations
- 

# Menopause

- Cessation of vaginal/menstrual bleeding for 12 consecutive months
- Average age = 51yo
- Factors affect age of onset, transition
  - Smoking status, genetics, ethnicity, BMI, medical diagnoses
- Symptoms that began in perimenopause often continue through menopause and may be life long



# Evaluation? Testing?

- Not all women need evaluation or treatment
  - Bleeding changes may need to be evaluated
  - Lab evaluation generally should not guide treatment
  - Vasomotor symptoms/vaginal changes are responsive to hormone therapy
    - Risks/benefits/alternatives to HRT
    - Different kinds of HRT
- 

# Primary ovarian insufficiency

- AKA 'early menopause'
- Oligomenorrhea/amenorrhea, symptoms of estrogen deficiency (vasomotor symptoms, vaginal) and abnormal labs prior to age 40
- *Should* receive hormone therapy
  - Cardiovascular disease, osteoporosis, cognitive function, symptom management/quality of life, preservation of sexual function



# Post menopausal bleeding

- Never normal
- Needs immediate evaluation
  - Endometrial cancer until proven otherwise
  - Atrophy common cause
  - Polyps, fibroids, lacerations, vulvar lesions



# Post menopausal bleeding

- Exam +/- endometrial biopsy
- Lab evaluation pending bleeding pattern/acuity
- Ultrasound to evaluate endometrium
- Hysteroscopy, hysterectomy, medical management with hormone replacement therapy

Questions?

