UTERINE FIBROIDS (LEIOMYOMAS)

FLAME LECTURE: 227

BURNS / CAROL 8.29.19

LEARNING OBJECTIVES

- Discuss the prevalence of uterine leiomyomas
- Describe the symptoms and physical findings of a patient with uterine leiomyomas
- Describe the diagnostic methods to confirm uterine leiomyomas
- List the management options for the treatment of uterine leiomyomas
- Prerequisites: NONE
- See also: NONE

EPIDEMIOLOGY

- Extremely common benign growth of uterine smooth muscle cells
  - Lifetime risk: 70% in Caucasian women and >80% of African American women
- Most common indication for surgery in women (~1/3 of all hysterectomies)
- They are hormonally sensitive - grow and shrink in response to fluctuating levels of estrogen/progesterone
  - Most will regress after menopause when circulating hormones decrease

EPIDEMIOLOGY

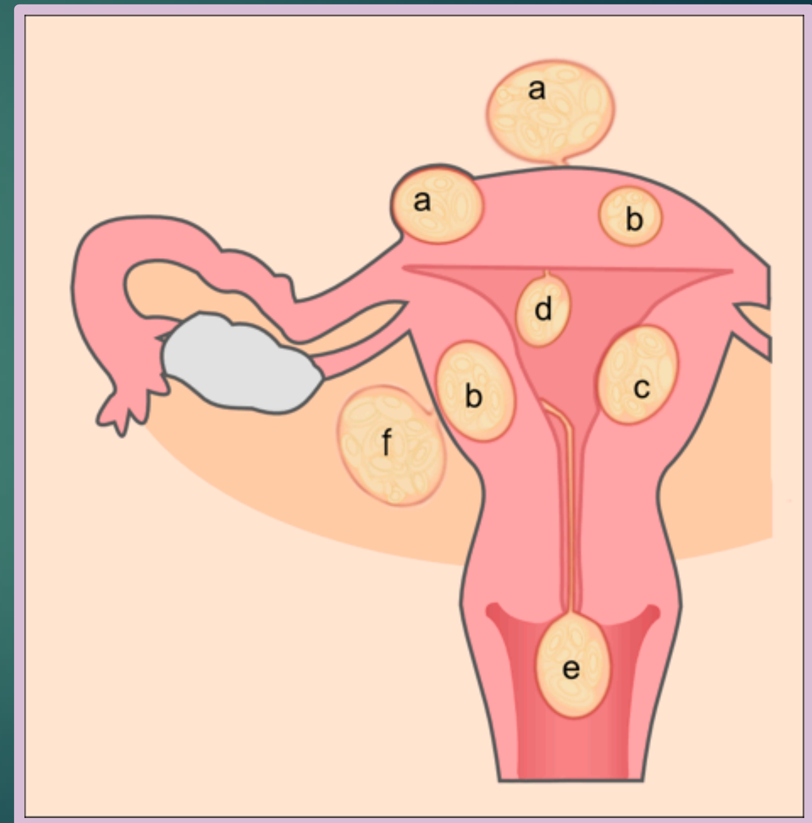
- Risk Factors:
  - African American
  - Hypertension
  - Early menarche
  - Peri-menopausal
  - Increased alcohol
  - Family History
- Protective Factors:
  - Increasing parity
  - Oral contraceptive use
  - Injectable DMPA

PATHOPHYSIOLOGY

- Uterine leiomyomas are *monoclonal tumors* meaning they arise from a single progenitor smooth muscle cell
- Uterine fibroids are benign and can remain asymptomatic in many women
  - They do NOT have malignant potential to transform into leiomyosarcomas
- However, leiomyosarcomas are malignant tumors that can also arise from smooth muscle cells of the uterus independently
  - Notably, many women who develop leiomyosarcoma also have leiomyomas

PATHOPHYSIOLOGY

- Symptoms and classification depend location of fibroid on uterus
  A. Subserosal
  B. Intramural
  C. Submucosal (SM)
  D. SM (Pedunculated / Intracavitary type)
  E. Parasitic



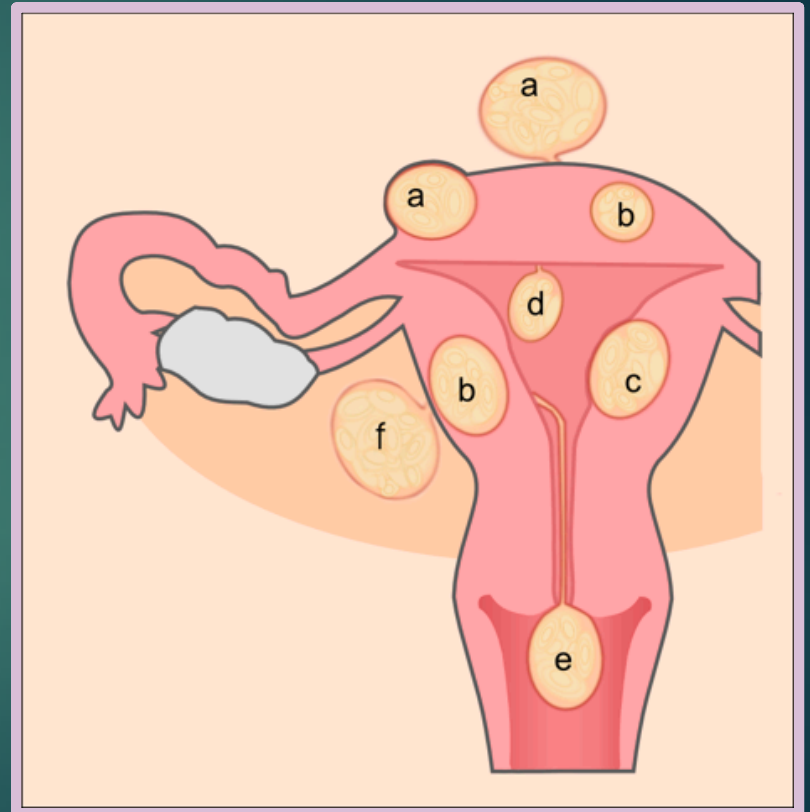
CLINICAL PRESENTATION

- Most fibroids are asymptomatic and discovered incidentally
- Others require intervention because they cause discomfort, bleeding, or infertility
- 3 classes of symptoms:
  - Abnormal uterine bleeding
  - Bulk-related symptoms: Pelvic pressure/pain
  - Reproductive difficulties: infertility, pregnancy loss, obstetric complications

	CLINICAL SYMPTOMS[2]
F	Frequency/retention of urine
I	Iron deficiency anemia
B	Bleeding abnormalities
R	Reproductive difficulties (preterm/difficult labor, increased C-section rate)
O	Obstipation/rectal pressure
I	Infertility
D	Dysmenorrhea
S	Symptomless (most common)

CLINICAL PRESENTATION

- Clinical symptoms depend on size and location of fibroid
  - Submucosal fibroids (C/D) which protrude into the uterine cavity can disrupt the endometrium causing abnormal uterine bleeding (the most common symptom), infertility, or problems with placental implantation (like miscarriage)
  - Large subserosal fibroids (A) can put pressure on surrounding structures causing hydronephrosis, urinary frequency, constipation, and venous stasis



DIFFERENTIAL & DIAGNOSIS

- When symptomatic, the most common presentation of uterine fibroids is abnormal uterine bleeding, thus differential = PALM COEIN
  - Structural causes
    - P: polyps
    - A: adenomyosis
    - L: leiomyoma
    - M: malignancy/hyperplasia
  - Non-structural causes
    - C: coagulopathy
    - O: ovulatory dysfunction
    - E: endometrial factor
    - I: iatrogenic
    - N: not yet classified

Adenomyosis vs. Fibroids:

Both cause AUB and have enlarged uteri. However:

A) Fibroids are surrounded by pseudo-capsule separating abnormal tissue from surrounding myometrium

B) Fibroids lead to an *irregularly* enlarged uterus, adenomyosis generally causes symmetrical enlargement

- Also, in a reproductive age woman with enlarging uterus, always check for pregnancy

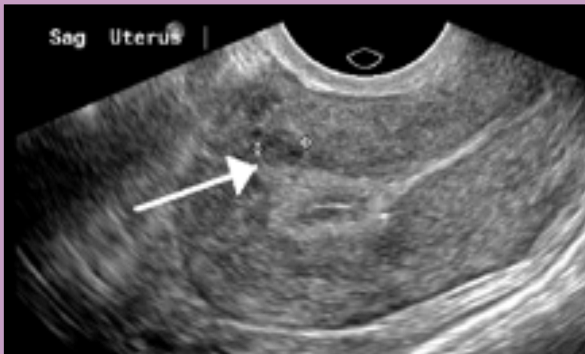
A SIDENOTE ON POLYPS…

- Localized benign overgrowth of **endometrial** tissue (different origin tissue from fibroids)
- Can be pedunculated and prolapse into vagina
- Risk factors:
  - Usually occur in age 40-50, but can occur after menopause
  - Obesity
  - Tamoxifen increases risk by causing endometrial proliferation due to estrogen agonism (but more concerning is potential for hyperplasia/malignancy development)
- Most common symptom is abnormal uterine bleeding (the ‘P’ in PALM-COEIN) but they can also cause dyspareunia and post-coital bleeding if prolapses into vagina
- Diagnosis: Ultrasound or sonohystogram can visualize polyp but hysteroscopy can concurrently remove polyp. Even with confirmed polyp + AUB in woman >45, should still do EMB to rule out malignancy.
- Polyps, though benign, should be removed because their bleeding can mask underlying malignancy. Can also contribute to infertility.
  - Removed via **hysteroscopic polypectomy** for full visualization of polyp origin even if prolapsed through cervix

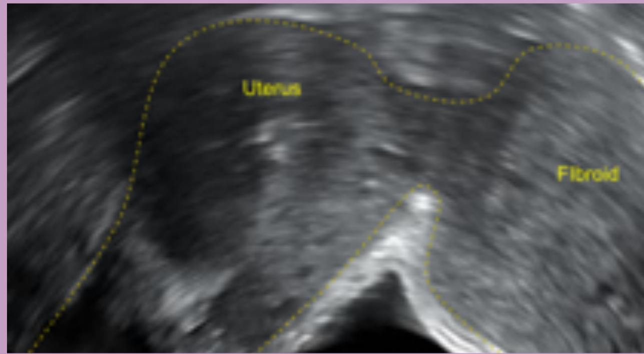
DIAGNOSIS OF FIBROIDS

- **Pelvic Exam**
  - Enlarged, mobile, irregularly shaped uterus without any corresponding ovarian masses
- **Transvaginal Ultrasound**
  - First Line Test: High sensitivity, low cost
  - For better visualization, can inject saline into uterus to visualize extent of disruption of endometrial cavity if concern for a submucosal fibroid (Saline Sonohysterogram)
  - Calcifications in fibroid suggests fibroid is undergoing necrosis (degenerating fibroids)
- **Hysteroscopy**
  - Can visualize inside uterine cavity but difficult assessing size and fibroids that are not submucosal or pedunculated
- **MRI**
  - Best for distinguishing between fibroids and other causes of enlarged uterus (adenomyosis, or even concern for leiomyosarcoma) but is expensive and not as widely used. Best used pre-operatively to guide surgery.

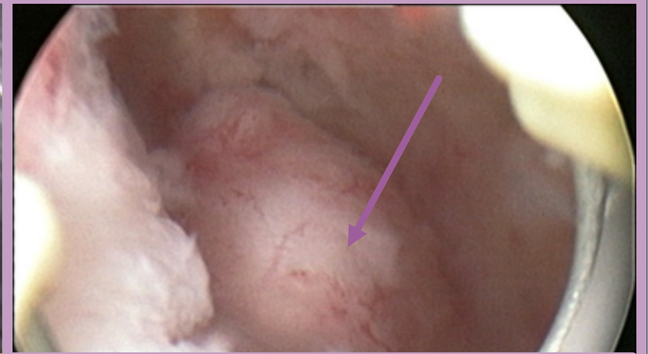
ULTRASOUND & HYSTEROSCOPY



Small intramural fibroid seen on **ultrasound**



Large subserosal fibroid seen on **ultrasound**



Submucosal fibroid seen on **hysteroscopy**

TREATMENT
PHARMACEUTICAL OPTIONS

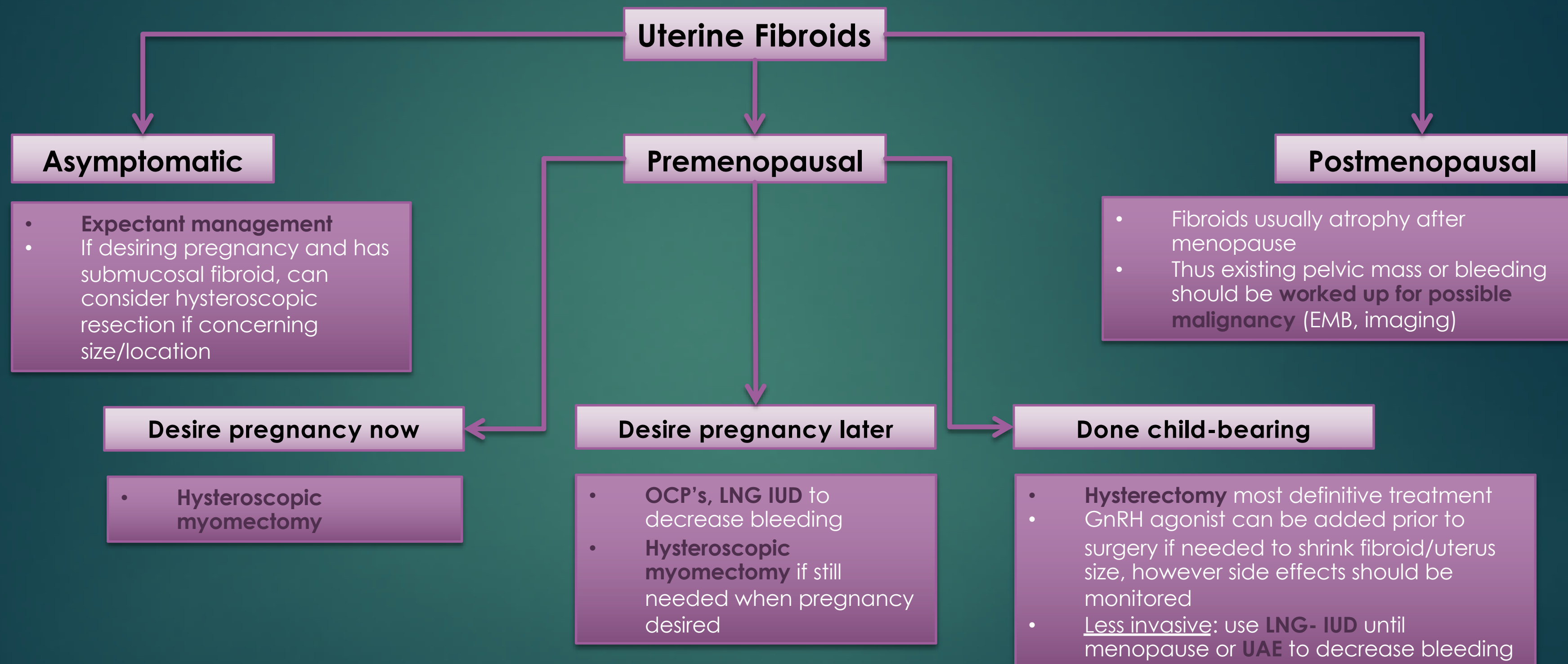
- Combined Hormonal Contraceptives
  - Pros: can reduce bleeding in setting of fibroids and can prevent occurrence of new fibroids
  - Cons: may exacerbate pressure/bulk-related symptoms
- Progestins (helpful for patients with contraindications to estrogen)
  - Medroxyprogesterone acetate, Etonorgestrel implant (Nexplanon), Progestin-only pills
    - Pros: reduce bleeding and fibroid size via vaginal atrophy
    - Cons: will not resolve fibroid or aid fertility; may have breakthrough bleeding
  - Levonorgestrel-releasing IUD (i.e. Mirena, Liletta)
    - Pros: reduce bleeding/menorrhagia and uterine volume
    - Cons: will not resolve fibroid or aid fertility, intracavitary leiomyomas may make placement difficulty or not possible

TREATMENT
PHARMACEUTICAL OPTIONS

- GnRH agonist (leuprolide) or antagonists (elagolix)
  - Pros: effective at shrinking fibroids due to decreased estrogen, best used to shrink fibroids prior to surgery
  - Cons: can only be used for short time, <6 months, due to side effects (essentially causes functional menopause and decreased bone mineral density). Fibroids will again enlarge when medication is stopped
  - Note: can consider add-back hormonal therapy to improve these cons
- Progesterone receptor modulators (Ullipristal acetate & Mifepristone)
  - Pros: Temporary use to shrink fibroid size before surgery
    - Equal efficacy at decreasing bleeding and anemia + safer side effect profile than GnRH agonists
  - Cons: Not as effective at shrinking uterus compared to GnRH agonists, currently not available in daily low dosing and available doses are too high, have adverse effects when used regularly

TREATMENT
PHARMACEUTICAL OPTIONS

- Uterine Artery Embolization (UAE)
  - Pros: minimally invasive option, good option for fibroids with heavy bleeding
  - Cons: limited data on fertility after UAE, some data to support increased acute and chronic pelvic pain following procedure
- Myomectomy (Laparoscopic, including robotic-assisted, or Open Approach)
  - Pros: fertility-sparing, can be minimally-invasive
  - Cons: high chance of recurrence of fibroids, can cause adhesions
- Hysterectomy
  - Pros: **only definitive treatment for fibroids**
  - Cons: not fertility-sparing


TREATMENT OVERVIEW
Uterine Fibroids
Asymptomatic
Premenopausal
Postmenopausal
Expectant management
If desiring pregnancy and has submucosal fibroid, can consider hysteroscopic resection if concerning size/location
Fibroids usually atrophy after menopause
Thus existing pelvic mass or bleeding should be worked up for possible malignancy (EMB, imaging)
Desire pregnancy now
Desire pregnancy later
Done child-bearing
Hysteroscopic myomectomy
OCP's, LNG IUD to decrease bleeding
Hysteroscopic myomectomy if still needed when pregnancy desired
Hysterectomy most definitive treatment
GnRH agonist can be added prior to surgery if needed to shrink fibroid/uterus size, however side effects should be monitored
Less invasive: use LNG- IUD until menopause or UAE to decrease bleeding

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