
بسم الله الرحمن الرحیم

leiomyomas

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INTRODUCTION

Uterine leiomyomas (fibroids or myomas)

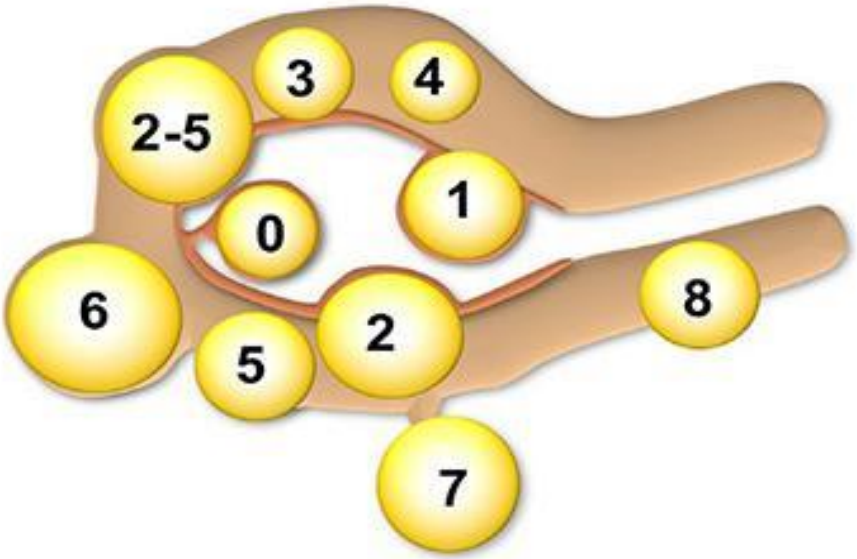
- most common pelvic tumor in females .
- noncancerous monoclonal tumors arising from the smooth muscle cells and fibroblasts of the myometrium.
- reproductive-age
- symptoms of AUB and/or pelvic pain/pressure.
- reproductive effects (eg, infertility, adverse pregnancy outcomes).

TERMINOLOGY AND LOCATION

Polyp	Submucous
Adenomyosis	Other
Leiomyoma	
Malignancy and hyperplasia	

Coagulopathy
Ovulatory dysfunction
Endometrial
Iatrogenic
Not otherwise classified

FIGO leiomyoma subclassification system



SM – submucous	0	Pedunculated intracavitary
	1	<50% intramural
	2	≥50% intramural
	3	Contacts endometrium; 100% intramural
O – Other	4	Intramural
	5	Subserous ≥50% intramural
	6	Subserous <50% intramural
	7	Subserous pedunculated
	8	Other (specify eg, cervical, parasitic)

Hybrid (contact both the endometrium and the serosal layer)	Two numbers are listed separated by a hyphen. By convention, the first refers to the relationship with the endometrium while the second refers to the relationship to the serosa. One example is below.	
	2-5	Submucous and subserous, each with less than half the diameter in the endometrial and peritoneal cavities, respectively.

PREVALENCE

The actual prevalence is unknown since studies have been conducted mainly in symptomatic patients or following hysterectomy.

RISK FACTORS

- Reproductive and endocrine factors — gonadal steroids+
- Parity -
- older age at first birth -
- a longer interval since last birth -
- Early menarche — (<10 years old) +
- Hormonal contraception +,- exception :early exposure to OCs (13 to 16 years old+) .
- Long-acting progestin-only contraceptives (eg, depot medroxyprogesterone)-
- menopause (not all)-
- Hrt + (not new symptom)(myomas not contraindication for HRT)
- Post partum -

RISK FACTORS

- Other endocrine factors — Prenatal exposure to DES +
- ovulation induction -,+ higher response to ovarian stimulation -
- Environmental exposures (phthalates, polychlorinated biphenyl, and bisphenol A)+
- Obesity +
- Diet, alcohol +, smoking-

RISK FACTORS

- reds meats + green vegetables and fruit (especially citrus fruit) -
- dairy products, but not soy products+
- dietary glycemic index or load +
- fat intake - , + marine omega-3 fatty acids +
- carotenoids - , +
- Dietary vitamin A from animal sources -
- vitamin D deficiency or insufficiency+
- Caffeine - ,+

RISK FACTORS

- Genetics — familial predisposition +
- Race – Black females + , Latin American females +
- Hypertension + , type 2 diabetes -
- Uterine infection ?+ chlamydia -

PREVENTION

- Given the high prevalence, high recurrence risk following conservative treatment, and substantial impact on quality of life, preventive measures for uterine fibroids are needed.
- high physical activity –
- vitamin D deficiency, inflammatory markers, hormonal receptors, and more ?

CLINICAL FEATURES

- symptoms or pelvic imaging

- The majority of myomas are small and asymptomatic.
- The symptoms are related to the number, size, and location of the tumors.
- The size of the myomatous uterus is described in menstrual weeks as with the gravid uterus.

- Symptoms are classified into three categories:

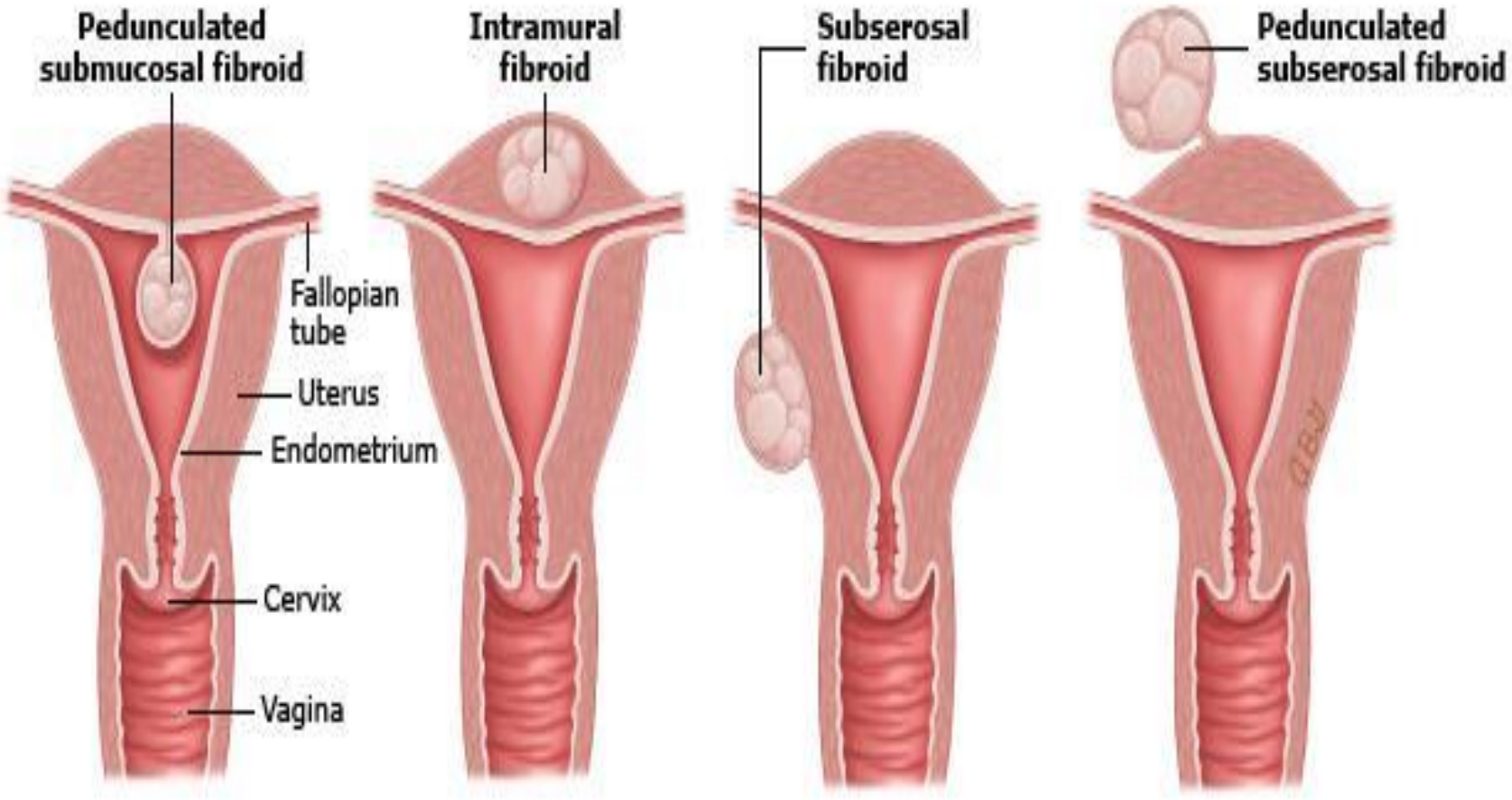
  - Heavy or prolonged menstrual bleeding
  - Bulk-related symptoms, such as pelvic pressure and pain
  - Reproductive dysfunction (ie, infertility or obstetric complications)

- (AUB) and menstrual cramps (26 to 29 percent)
- Abdominal pain or tightness (19 percent of)

Heavy or prolonged menstrual bleeding

- the typical bleeding pattern :Heavy and/or prolonged menses . For any AUB pattern, IMB /PMB , endometrial sampling should be performed if endometrial hyperplasia or carcinoma is suspected. ***keep in mind that a patient may have fibroids and may also have endometrial neoplasia.***
- Heavy uterine bleeding may be responsible for associated problems, such as iron deficiency anemia, social embarrassment, and lost productivity in the work force.
- The presence and degree of uterine bleeding are determined, in large part, by the location of the fibroid; size is of secondary importance
- The mechanism(s) of profuse menses in patients with leiomyomas are unclear

Fibroid locations



Bulk-related symptoms

- pelvic pain or pressure :chronic, intermittent, dull pressure or pain.

- urinary tract/ bowel obstruction : frequency, difficulty emptying the bladder, rarely complete urinary obstruction , hydronephrosis , constipation,
- venous compression : compress the V.C and lead to an increase in thromboembolic(risk 4%)
- Back pain

Other pain or discomfort issues

- Painful menses
- Painful intercourse
- Fibroid degeneration or torsion (eg, carneous or red degeneration) results in pelvic pain and may be associated with a low-grade fever, uterine tenderness on palpation, elevated WBC , or peritoneal signs. The discomfort is self-limited, lasting from days to a few weeks, and usually responds to NSAIDs
- In cases where the etiology of pain is unclear, pelvic MRI is useful. endometriosis, renal colic or pelvic tuberculosis, should be excluded

Infertility or obstetric complications

- submucosal or intramural leiomyomas with an intracavitary component have been thought to result in difficulty conceiving a pregnancy and an increased risk of miscarriage .

- In addition, leiomyomas have been associated with adverse pregnancy outcomes (eg, placental abruption, fetal growth restriction, malpresentation, and preterm labor and birth).

Other issues

- Prolapsed fibroid – mass, bleeding, and possible ulceration or infection

- Endocrine effects – Rare symptoms of fibroid tumors where fibroids can secrete ectopic hormones include:

  - Polycythemia from autonomous production of erythropoietin
  - Hypercalcemia from autonomous production of parathyroid hormone-related protein
  - Hyperprolactinemia

DIAGNOSTIC EVALUATION

- Characteristic symptoms :heavy or prolonged menstrual bleeding, pelvic pain, infertility, or other symptoms.
- pelvic examination: an enlarged, mobile uterus with an irregular contour on bimanual pelvic examination(except small submucosal or intramural fibroids)
- pelvic ultrasound
- definitive diagnosis by pathology

History

- Pain related to fibroids is not likely to have an acute onset, except in the infrequent cases of fibroid torsion and degeneration.

- Pain associated with menses may also indicate adenomyosis, endometriosis, or primary painful menses.

Physical examination

- abdominal and pelvic examination. Vital signs

An enlarged, mobile uterus with an irregular contour is consistent with a leiomyomatous uterus.

- Prolapsed fibroids - endocervical or endometrial polyp: pathology evaluation.
- prolapsing fibroid - pedunculated cervical fibroid: imaging study.

Laboratory testing

- Laboratory testing does not have a role in the diagnosis of uterine leiomyomas but is important in evaluating for other associated conditions, including:
  - Pregnancy
  - Anemia
  - Endometrial biopsy
- There is also some evidence that uterine sarcomas can be diagnosed by endometrial biopsy.

Imaging and endoscopy

- Pelvic ultrasound is the imaging study of choice for uterine leiomyomas, based on the ability to visualize genital tract structures and cost-effectiveness. saline-infused sonogram, hysteroscopy , MRI ,CT ,HSG

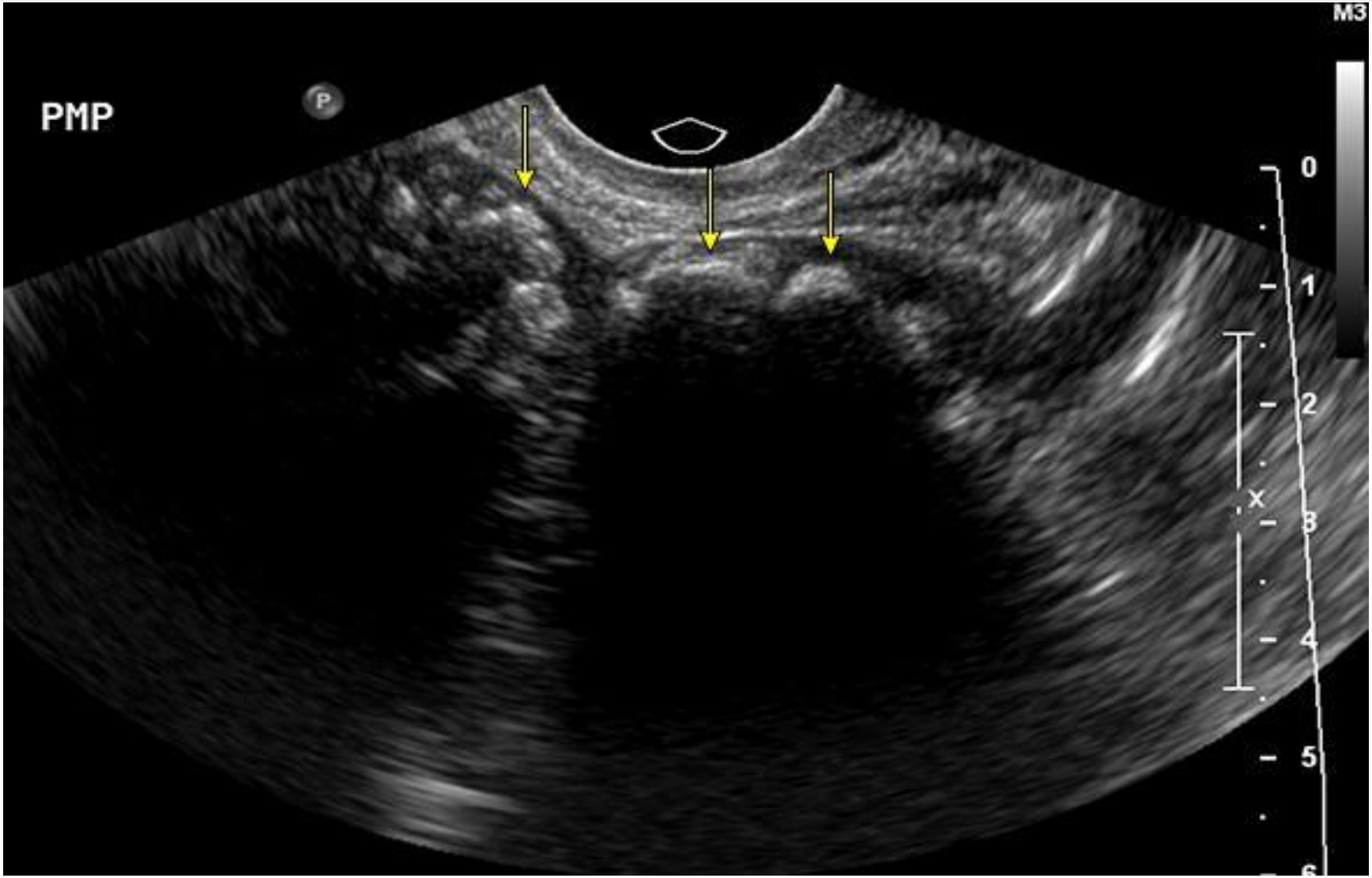
Step one: Pelvic ultrasound

- Transvaginal ultrasound has high sensitivity (95 to 100 percent) for detecting myomas in uteri less than 10 gestational weeks' size . Fibroids are seen on ultrasound usually as hypoechoic, well-circumscribed round masses, frequently with shadowing; cellular fibroids may appear to be more isoechoic, making differentiation from the normal myometrium difficult, or hyperechoic. Adenomyomas can mimic the appearance of cellular fibroids or multiple small fibroids. Sarcoma is also difficult to differentiate on imaging.

- On imaging, calcification in a fibroid generally implies that it has degenerated. ("popcorn" calcifications - clumps or rim-like calcifications within a mass) .

- urinary tract obstruction: renal ultrasound (hydronephrosis).

Step one: Pelvic ultrasound



Step two: Evaluate the uterine cavity in patients with suspected submucous fibroids or those desiring fertility

- Saline infusion sonography is helpful when planning a hysteroscopic resection of a fibroid or evaluating the potential risks of fertility associated with a fibroid.
- Hysteroscopy — Diagnostic hysteroscopy is useful for visualizing the endometrial cavity.
- the depth of penetration cannot be ascertained hysteroscopically. Additionally, hysteroscopy less accurately predicts the size of the myoma compared with ultrasound and sonohysterography
- Hysteroscopy can help in the planning of a hysteroscopic resection of a submucosal fibroid if ultrasound has already confirmed size and proximity to the endometrium and rule out small polyps not seen on ultrasound.

Step three: Additional imaging as necessary when complex intervention is planned or malignant disease is suspected

MRI:

- size and location
- leiomyomas, adenomyosis, and adenomyomas.
- expense (reserved for complicated procedures)

DIAGNOSIS

- The diagnosis is typically made based upon a pelvic ultrasound finding of leiomyomas.
- The indication for pelvic imaging typically includes symptoms of AUB , pelvic pain or pressure, or infertility; enlarged uterus on pelvic examination.

- In general, pathology confirmation is not required to proceed with management, except in cases in which another lesion is suspected, such as a uterine sarcoma or leiomyoma variant.

DIFFERENTIAL DIAGNOSIS

- It is important to note that leiomyomas are a common condition, and other coexisting conditions may be the etiology of the presenting symptoms.

- The differential diagnosis of an enlarged uterus includes both benign and malignant conditions

DIFFERENTIAL DIAGNOSIS

- Pregnancy
- Myometrial lesions:
  - Benign leiomyoma
  - Adenomyosis (diffuse infiltration of the myometrium) or adenomyoma
  - Leiomyoma variant
  - Leiomyosarcoma
  - Metastatic disease

DIFFERENTIAL DIAGNOSIS

- Endometrial lesions:
  - Benign submucosal leiomyoma
  - Endometrial polyp – These tend to be small and are unlikely to cause an enlarged uterus
  - Endometrial carcinoma (may invade into the myometrium) or hyperplasia
  - Carcinosarcoma – Considered an epithelial neoplasm
  - Endometrial stromal sarcoma (mimics endometrium but invades the myometrium)

DIFFERENTIAL DIAGNOSIS

- Hematometra usually following an intrauterine procedure (eg, D & C)

DIFFERENTIAL DIAGNOSIS

- Pregnancy should be excluded in any patient of reproductive age who presents with an enlarged uterus, AUB, and/or pelvic pain.
- Most commonly, when faced with an enlarged uterus, uterine leiomyomas must be differentiated from uterine adenomyosis. Patients with adenomyosis more often present with a diffusely enlarged uterus, painful menses, and AUB. On examination in a patient with adenomyosis, the uterus is typically smooth, globular, and boggy. The two conditions are usually differentiated by imaging since each has a characteristic appearance on ultrasound.
- Patients may develop adenomyomas, which are benign glandular tumors within the myometrium. These can closely resemble leiomyomas on imaging. Adenomyoma and fibroids often occur in the same patient, making differentiation more difficult . Intraoperatively, adenomyomas are generally more difficult to excise than leiomyomas. Leiomyomas are typically separated from the adjacent myometrium by a pseudocapsule. With adenomyomas, there is typically no tissue plane between the adenomyoma and the myometrium.

DIFFERENTIAL DIAGNOSIS

endometrial carcinoma:

- bleeding with /without uterine mass.
- the ultrasound findings : thickened endometrium or, a lesion invading to the myometrium.
- Endometrial sampling

DIFFERENTIAL DIAGNOSIS

- Leiomyomas are a common condition, and thus, it may be presumed that a patient has myomas rather than a rare smooth muscle neoplasm. This includes leiomyoma variants that manifest some facets of malignancy yet lack others. For example, they may metastasize but not be locally invasive and be histologically benign. Some of these variants show no facets of malignancy. These lesions appear to be exceedingly rare

DIFFERENTIAL DIAGNOSIS

Uterine sarcoma :

- rare and has a poor prognosis .
- focal masses in the uterine myometrium.
- The main type of sarcoma that may resemble a leiomyoma is leiomyosarcoma, which presents as a myometrial mass, often with AUB.
- In contrast, endometrial stromal sarcoma presents as an endometrial mass.
- similar appearance to a submucosal leiomyoma.
- most sarcomas are not detected preoperatively.
- If there is a suspicion of a uterine sarcoma, operative techniques that disrupt the specimen (eg, myomectomy, morcellation) should be avoided.

DIFFERENTIAL DIAGNOSIS

Adenomatoid tumors :

- uncommon
- in the myometrium or in the adnexa (the most common place is actually next to the fallopian tube) .
- mesothelial proliferations and are not histologically related to adenomyosis.

DIFFERENTIAL DIAGNOSIS

pelvic imaging + description of the bleeding

- Heavy or prolonged menstrual bleeding
- Other AUB patterns, such as intermenstrual bleeding, irregular bleeding, or postmenopausal bleeding
- In the absence of a mass on pelvic ultrasound, leiomyomas can be excluded and other etiologies should be investigated .

PALM-COEIN classification system for abnormal uterine bleeding in nongravid reproductive-age women

Polyp
Adenomyosis
Leiomyoma
Malignancy & hyperplasia

→

Submucosal
Other

Coagulopathy
Ovulatory dysfunction
Endometrial
Iatrogenic
Not yet classified

DIFFERENTIAL DIAGNOSIS

Pelvic pain :

- characteristics of the pain (ie, location, severity, timing of onset, duration, pattern, sensation, associated factors)
- Gastrointestinal, urinary tract, or other sources of pelvic pain
- In general, pain is not a major symptom in patients with fibroids. If discomfort is present, it is likely to be chronic, intermittent, dull pressure or pain.

Female infertility:

Fibroids are usually discovered, if present, on pelvic ultrasound that is part of the routine evaluation.

NATURAL HISTORY

- Prospective studies have found that between 7 to 40 percent of fibroids regress over six months to three years .