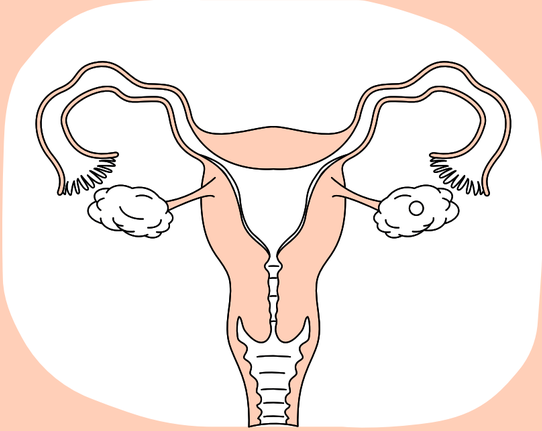
Fibroid Uterus



Definition

Uterine fibroids (leiomyomas):

- are benign, monoclonal smooth muscle tumors of the uterus that contain varying amounts of fibrous connective tissue.

- They are the most common pelvic tumors in women, are hormonally responsive, and may be asymptomatic or associated with symptoms such as heavy menstrual bleeding, pelvic pain, and infertility.”

Pathogenesis

🟢 Step 1: How fibroids start

- Fibroids begin from one muscle cell in the uterus wall (myometrium).
- This cell undergoes a genetic change (mutation).
- The most common mutation is in the MED12 gene.
- Others include HMGA2 and some rare ones.
- Because of this mutation, that single cell starts multiplying → forming a clonal tumor (all cells come from one parent cell).

e hormone-dependent, benign tumors.

Pathogenesis

🟢 Step 2: Why they grow (hormones)

- Fibroids need hormones to grow:
- Estrogen → increases the number of progesterone receptors in the fibroid.
- Progesterone → the main hormone that makes the fibroid bigger, prevents cell death, and increases fibrosis (scar-like tissue).
- That’s why:
- Fibroids grow in reproductive years (high hormones).
- They shrink after menopause (low hormones).
- They enlarge in pregnancy (hormones high).

Pathogenesis

🟢 Step 3: Growth factors & extracellular matrix (ECM)

- Fibroid cells release growth factors like TGF-β (Transforming Growth Factor), IGF, EGF.
- These growth factors:
- Stimulate more cell division.
- Stimulate fibroblasts to make collagen and fibronectin → this builds up ECM.
- Result: fibroids feel hard, rubbery, and fibrotic.

Pathogenesis

🟢 Step 4: Local environment & blood supply

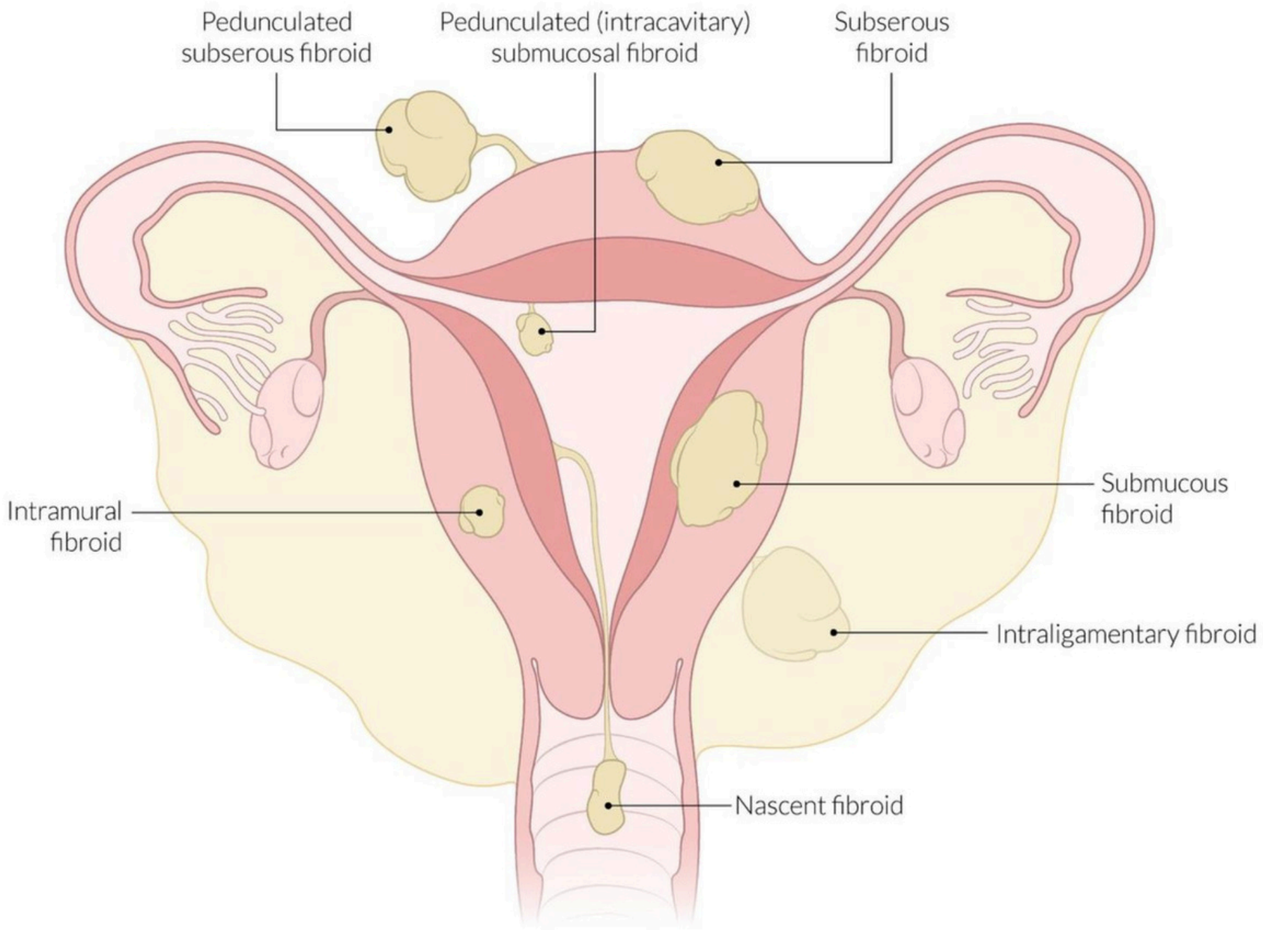
- Fibroids create their own mini environment:
- Poor blood supply → relative hypoxia (low oxygen).
- This triggers VEGF (angiogenesis factor) to form new vessels.
- Local cytokines & inflammation keep the tumor alive and expanding.

✅ **In short:**

Fibroids start from a genetic change in one muscle cell, then hormones (estrogen & progesterone) feed the growth, while growth factors and fibrosis make them enlarge and hard. That’s why they are hormone-dependent, benign tumors.

Types of Fibroids

Types of Fibroids



- Subserosal leiomyoma: located in the outer uterine wall beneath the peritoneal surface
- Intramural leiomyoma (most common): growing from within the myometrium wall
- Submucosal leiomyoma: located directly below the endometrial layer (uterine mucosa)
- Cervical leiomyoma: located in the cervix
- Diffuse uterine leiomyomatosis: The uterus is grossly enlarged due to the presence of numerous fibroids.

History

Demographic Data

- Name , Age (common in 30–50 years) , Marital status, work.

Presenting Complaints

- Menstrual symptoms
- Heavy/prolonged bleeding
- Pressure symptoms
- Urinary frequency, urgency, retention (pressure on bladder).
- Constipation
- Abdominal lump or heaviness.
- Infertility, recurrent miscarriage, preterm labor.
- Pain
- Chronic pelvic pain.
- Acute pain (red degeneration, torsion of pedunculated fibroid).

History

Past History

- Previous similar complaints.
- History of anemia, blood transfusions.

Obstetric & Gynecological History

- Menstrual history
- Obstetric history (number of pregnancies, outcomes).
- Contraceptive history.

Medical & Drug History

- Previous surgeries for fibroid or uterus.
- Diseases
- Medication

Family & Social History

- Family history of fibroids.
- Impact on quality of life (fatigue, social/sexual issues).

Smoking, Alcohol

Examination

1. General Examination

- General appearance – pallor (anemia).
- Vital signs
- BMI/obesity.
- Signs of thyroid disease or other comorbidities.

2. Abdominal Examination

- **Inspection** – lower abdominal swelling .
- **Palpation**

- Lump arising from pelvis, firm, irregular, nodular.
- Non-tender unless degeneration present.
- Mobile from side to side, but restricted mobility vertically.
- Cannot be pushed below pubic symphysis (uterine origin).

- **Percussion** – dull over lump, resonant around.
- **Auscultation** – usually silent (unless pregnancy).

Examination

3. Pelvic Examination

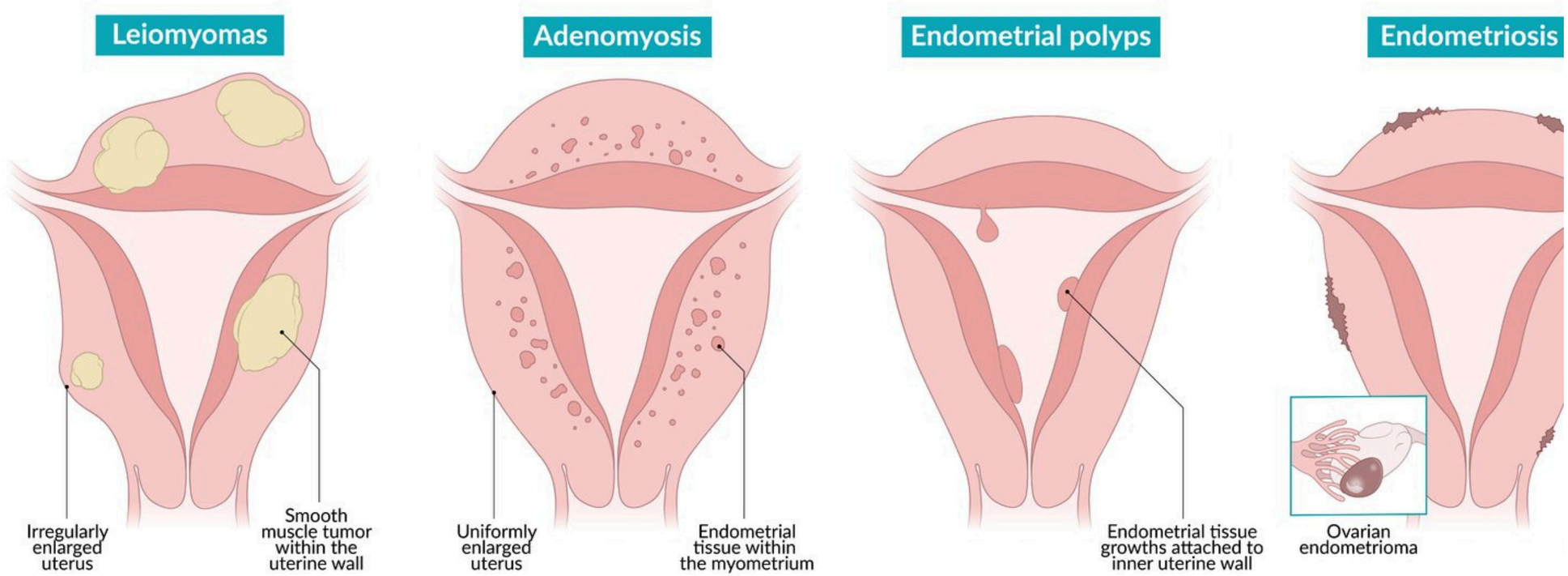
- **Speculum**: Cervix may be pulled up, irregular, or distorted.
- **Bimanual palpation:**

- Uterus enlarged, firm, irregular surface.
- Mass continuous with uterus.
- Mobility: mass moves with cervix.

4. Rectovaginal Examination

- To assess posterior fibroids and rectal involvement.

Differential diagnosis of uterine leiomyoma



Adenomyosis

- Definition:
  - Benign smooth muscle tumors within the uterine wall
  - (submucous, subserous, or in myometrium)
- Risk factor: Early menarche, Nullipara
- Clinical features:
  - Dysmenorrhea
  - Abnormal bleeding
  - Infertility (difficulty conceiving and increased risk of pregnancy loss
- Uterine findings: Irregularly enlarged, firm
- Pathology:
  - smooth muscle tissue in a whorled pattern with well-demarcated borders

Endometriosis

- Definition: Benign endometrial tissue within the uterine wall
- Risk factor: Early menarche Increased parity Previous uterine surgery
- Clinical features:
  - Dysmenorrhea
  - Abnormal bleeding
  - Menorrhagia
  - Chronic pelvic pain
- Uterine findings: Uniformly enlarged
- Pathology:
  - Irregular distribution of smooth cells and endometrial glandular tissue in the myometrium

Endometrial polyps

- Definition: Benign endometrial tissue outside the uteru
- Risk factor: Retrograde menstruation
- Clinical features:
  - Dysmenorrhea
  - Pelvic pain
  - Abnormal bleeding
  - Dyspareunia
  - Dysphasia
  - Infertility
- Uterine findings: Typically, not enlarge
- Pathology:
  - Gunshot lesions: black or yellow-brown nodules
  - Chocolate cysts

Endometrial polyps

- Definition:
  - Overgrowth of localized endometrial tissue attached to the inner wall of the uterus, usually benign
- Risk factor:
  - Menopause, Obesity, Hypertension, Tamoxifen therapy, Lynch syndrome See “Risk factors for endometrial polyps.
- Clinical features:
  - Abnormal bleeding
  - Menorrhagia
  - Postmenopausal bleeding
  - Infertility/difficulty conceive
- Uterine findings: Typically, not enlarged
- Pathology:
  - Pedunculated or sessile
  - Single or multiple
  - Length varies (up to many centimeters in size)

Uterine leiomyosarcoma

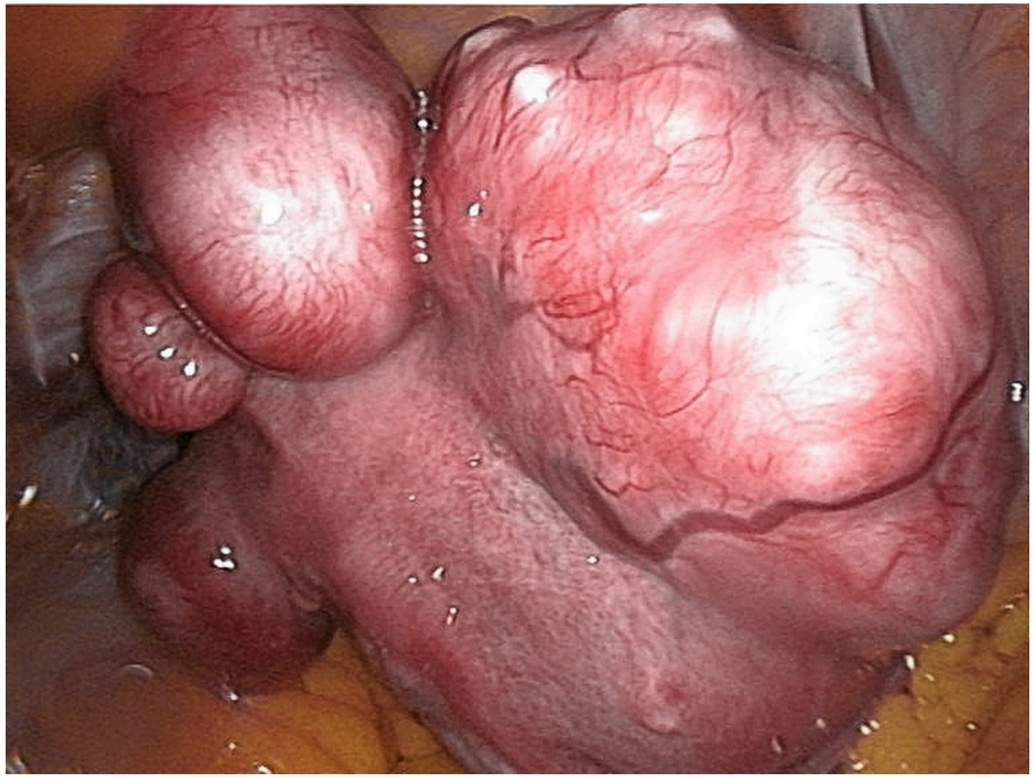
- Definition:
  - Rare malignant tumor arising from the smooth muscle cells of the myometrium
- Risk factor: Menopause & Tamoxifen use
- Clinical features:
  - Symptoms similar to uterine fibroids
  - Menstrual irregularities
  - Postmenopausal bleeding
  - Pelvic pain
- Uterine findings: Rapidly enlarging
- Pathology:
  - Single lesions with areas of coagulative necrosis and/or hemorrhage
  - Cords of polygonal cells with eosinophilic cytoplasm, abundant mitoses, and cellular atypia are common.

Pharmacotherapy for uterine leiomyoma [4]		
Predominant symptoms	**Agents**	**Important considerations**

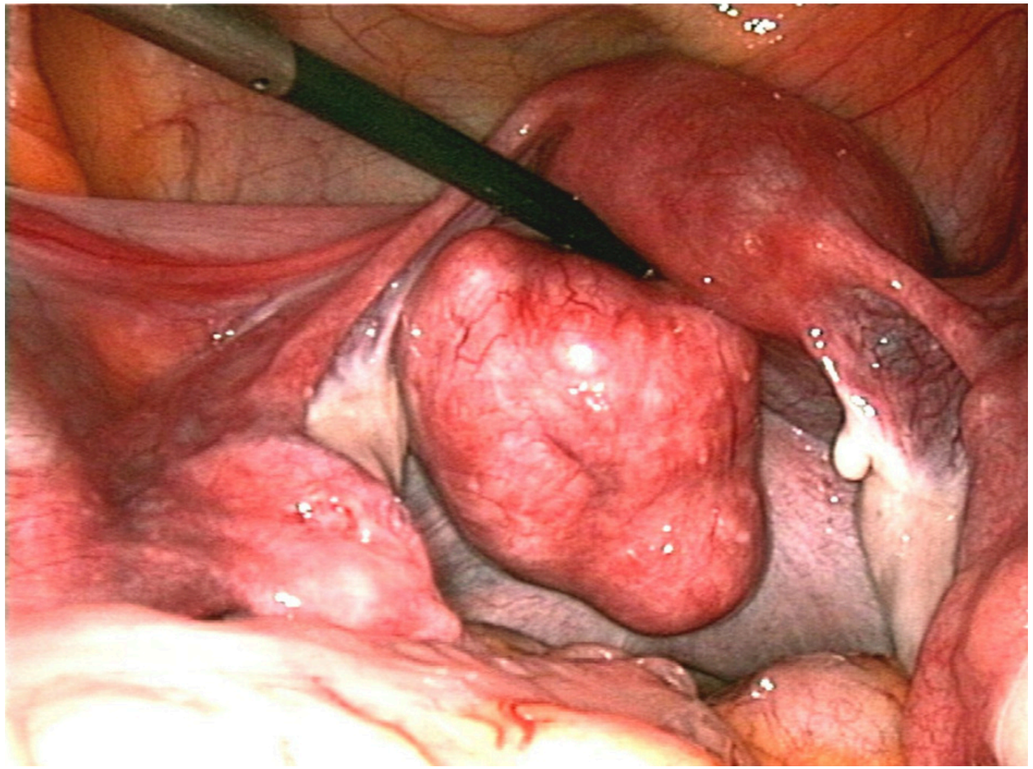
Heavy menstrual bleeding without features of mass effect	• GnRH antagonists in combination with hormone therapy [15][16]
	  ◦ Elagolix/estradiol/norethindrone combination
	  ◦ Or relugolix/estradiol/norethindrone
		• Use is limited to 2 years
		• May cause menopausal symptoms, increased LDL, and loss of bone density

	• Levonorgestrel intrauterine device (IUD)	• Difficult insertion if uterine cavity is distorted • High rate of IUD expulsion in patients with leiomyomas • May be more effective than oral contraceptives at reducing menstrual blood loss [4]
	• Oral contraceptives (combined oral contraceptive pill or progesterone-only pill)	• Often used as initial treatment for heavy menstrual bleeding
	• Tranexamic acid	• Contraindicated in patients with risk factors for VTE [4]

Mass effect with or without heavy menstrual bleeding	• GnRH agonists (e.g., leuprolide)	• Used primarily as a short-term bridge therapy:
		  ◦ Before planned surgery (decreases leiomyoma size and vascularization and overall uterine size)
		  ◦ Before interventional therapy or additional pharmacotherapy
		  ◦ Until menopause
		• Not suitable as long-term therapy because of the risk of hypoestrogenic effects (e.g., osteoporosis, hot flashes, altered lipid profile)



Uterine leiomyomas



Pedunculated uterine fibroid

Thank You