Obstetrics & Gynecology
TEAM

Endometrial neoplasm

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Endometrial neoplasm:

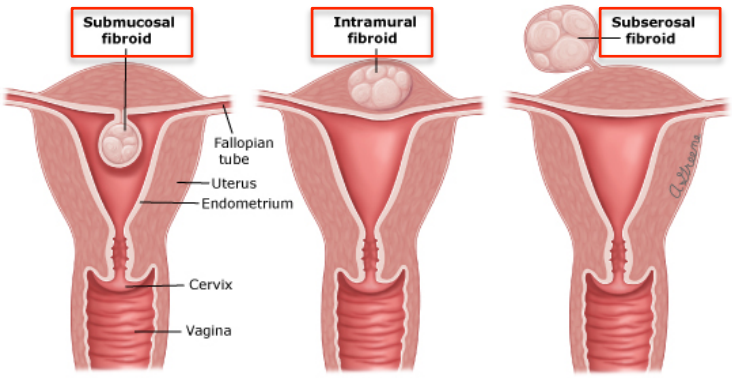
Neoplasms include both benign and malignant tumors (cancer).

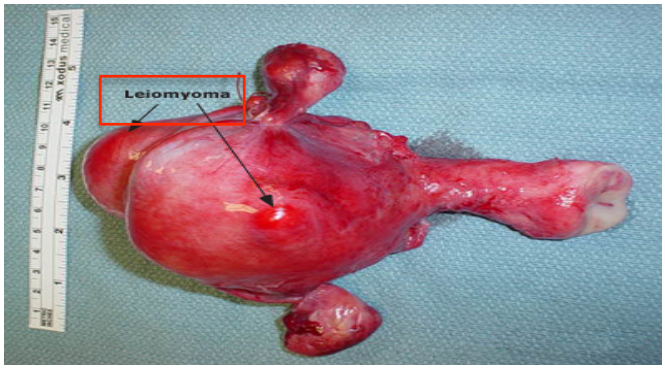
- Definitions
- Pathogenisis, Behavior & malignant potential.
- Clinical presentations
- Work – up
- Managements.

Leiomyomas

- Most common neoplasm of the uterus.
- Benign monoclonal tumors.
- Derived from the smooth muscle cell of the myometrium.
  (leiomyomas + fibroids + Myomas)→benign

Terminology & Location: (how to differentiate in images)





Figo staging: (not clinically applicable)

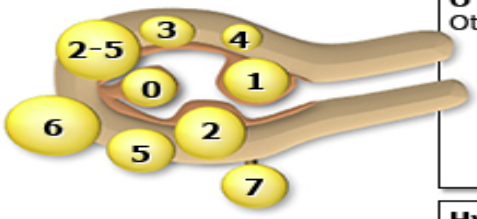
Polyp
Adenomyosis
Leiomyoma
Malignancy & hyperplasia

→

Submucosal
Other

Coagulopathy
Ovulatory dysfunction
Endometrial
Iatrogenic
Not yet classified

Leiomyoma subclassification system

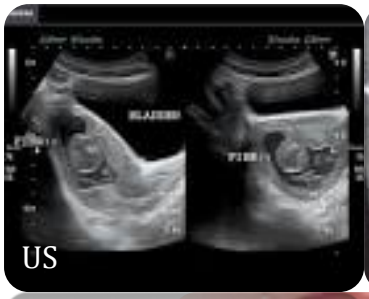


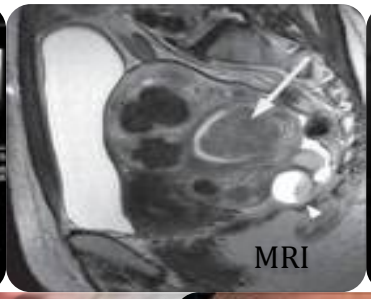
SM - Submucosal	0	Pedunculated intracavitary
	1	<50 percent intramural
	2	≥50 percent intramural
O - Other	3	Contacts endometrium; 100 percent intramural
	4	Intramural
	5	Subserosal ≥50 percent intramural
	6	Subserosal <50 percent intramural
	7	Subserosal pedunculated
	8	Other (specify, eg, cervical, parasitic)

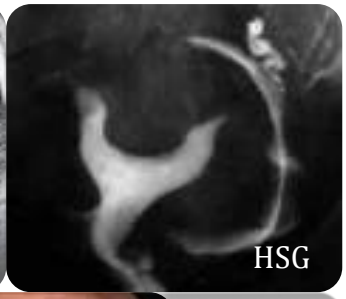
Hybrid leiomyomas (impact both endometrium and serosa)	Two numbers are listed separated by a hyphen. By convention, the first refers to the relationship with the endometrium while the second refers to the relationship to the serosa. One example is below.	
	2-5	Submucosal and subserosal, each with less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

Submucosal:

- Submucosal myomas (FIGO type 0,1,2)
  - These leiomyomas derive from myometrial cells just below the endometrium.
  - These neoplasms protrude into the uterine cavity.



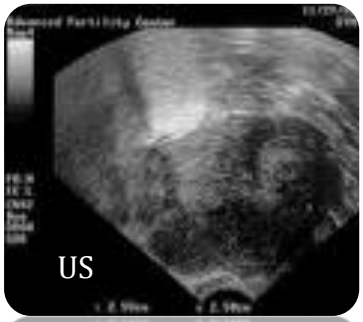


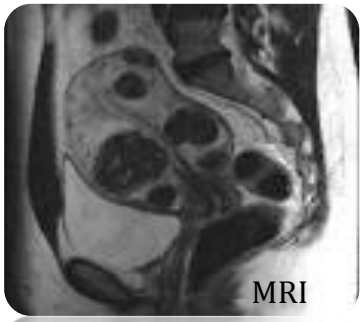


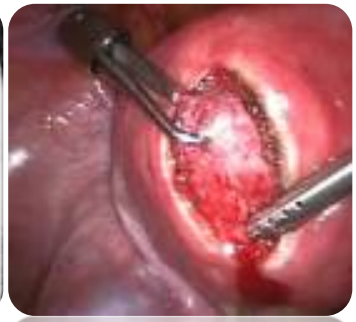

To differentiate between >50% and <50% intramural involvement histologically → when they cut the uterus it is not coming from the muscle itself, it is just pushing it.

Intramural:

- Intramural myomas (FIGO type 3,4,5) –
  - These leiomyomas develop from within the uterine wall.
  - They may enlarge sufficiently to distort the uterine cavity or serosal surface.
  - Some fibroids can be transmural and extend from the serosal to the mucosal surface.

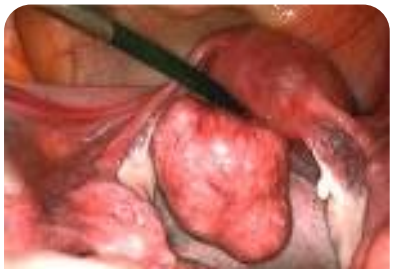







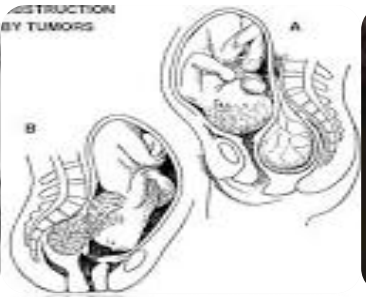
Subserosal:

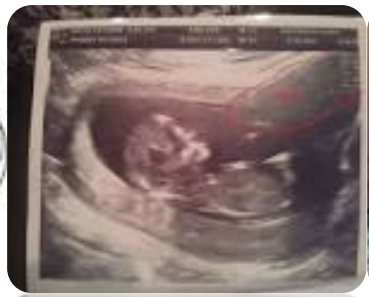
- Subserosal myomas (FIGO type 6,7) (the least type bothering the patient unless it is moving and causing irritation to underlying structures. Completely protrude outside the cavity)
  - These leiomyomas originate from the myometrium at the serosal surface of the uterus.
  - They can have a broad or pedunculated (with wide base or small base) base and may be intraligamentary (ie, extending between the folds of the broad ligament).



Cervical:

- Cervical myomas (FIGO type 8) (the least common type. One of the reasons of obstructed labour)
  - These leiomyomas are located in the cervix, rather than the uterine corpus.





The cervix might be mistaken with uterus

Prevelance:

- A hysterectomy study found myomas in 77 percent of uterine specimens
- The epidemiology of leiomyomas parallels the ontogeny and life cycle changes of the reproductive hormones estrogen and progesterone.
- Myomas are clinically apparent in approximately 12 to 25 percent of reproductive age women and noted on pathological examination in approximately 80 percent of surgically excised uteri .
- Most, but not all, women have shrinkage of leiomyomas at menopause.
  (Estrogen and progesterone does not cause fibroid, the initial reason for fibroid origination is not known, estrogen make the fibroid grow)
  (postmenopause = no hormone → fibroids do not grow)

Risk factors: The most important thing is the risk factors

- Race: (very important risk factor)
  - Two- to three-fold greater in black women than in white women
  - The natural history of leiomyomas also differs by race. Most white women with symptomatic fibroids are in their 30s or 40s; however, black women develop symptoms on average four to six years younger and may even present with disease in their 20s
  - Fibroids grow at a slower rate after age 35 in white women, but not in black women (e.g. if there are 100 women waiting in the waiting area, and halve of them are black and the other halve are white, and all of them will examine by US. 50% of black women will have fibroid while only 15% of white will have fibroid even if they are asymptomatic)
  - Compared with white women, black women experience more severe disease based on their symptoms and have more extensive disease at the time of hysterectomy
- Menstrual history and parity. (Any reason that make the woman expose more to estrogen) (IMP in MCQs)
  - Early menarche (<10 years old) is associated with an increased risk of developing fibroids
  - Prenatal exposure to diethylstilbestrol is associated with an increased risk of fibroids
  - Parity decreases the chance of fibroid formation (keeping the woman in a prolonged period of estrogen suppression)
  - Early age at first birth decreases risk and a longer interval since last birth increases risk
- Hormonal contraception
  - Use of low dose oral contraceptives (OCs) does not cause fibroids to grow, therefore administration of these drugs is not contraindicated in women with fibroids
  - Long acting progestin-only contraceptives (eg, depot medroxyprogesterone) protect against development of leiomyomas
  - Progestin works on endometrium not myometrium and the fibroid does not originate from endometrium.
- Heredity

- Studies imply a familial predisposition to leiomyomas in some women. There is also increasing evidence of specific susceptibility genes for fibroids.

❖ Ovulation induction agent
- There are isolated reports of leiomyoma enlargement in women treated with clomiphene

❖ Obesity
- Most studies show a relationship between fibroids and increasing body mass index. The relationship is complex and is likely modified by other factors, such as parity, and may be more related to change in body habitus as an adult.

❖ Diet, Caffeine, Alcohol & smoking
- Beef and other reds meats (1.7-fold) is associated with an increased relative risk of fibroids and consumption of green vegetables (0.5-fold) and fruit (especially citrus fruit) with a decreased risk, There is increasing evidence that vitamin D deficiency or insufficiency is linked to fibroid risk
- Consumption of alcohol, especially beer, appears to increase the risk of developing fibroids.
- Caffeine consumption is not a risk factor.
- Smoking decreases the risk of having fibroids.

Clinical manifestations:

❖ Heavy or prolonged menstrual bleeding: (it is important to know the definition of heavy period menorrhagia and polymenorrhagia)
Ask the patient about clot passage, and how many time she change her pads)
- Most common fibroid symptom, but does not mean that every patient with heavy bleeding has fibroid.
- If the patient complains of postcoital bleeding (due to irritation of the cervix), think about polyp more.
- Degree of uterine bleeding are determined by the location of the fibroid, size is of secondary importance.
- Patient with submucus fibroid bleeds more than patient with intramural fidroid while patient with subserosal may be silent and does not give any complain.
- Local cause= more bleeding.
- Submucosal myomas that protrude into the uterine cavity (eg, types 0 and I) are most frequently related to significant menorrhagia

❖ Pelvic pressure and pain
- Bulk-related symptoms
  - Urinary frequency, difficulty emptying the bladder, and, rarely, urinary obstruction can all occur with fibroids
  - Fibroids that place pressure on the rectum can result in constipation and difficulty in defecation.
  - Back pain may, on occasion, be related to the presence of myomas
  - Very large uteri may compress the vena cava and lead to increase in thromboembolic risk (very rare)
  - Alarming signe → when the paitent come to the doctor and says: "doctor I can not defecate without putting something to stimulate and bring the stool out". This is due to compression not constipation.
- Dysmenorrhea
- Dysmenorrhea is also reported by many women with fibroids (in early reproductive age). This pain in many women appears to be correlated with heavy menstrual flow and/or passage of clots. (Black woman complaining of very bad Dysmenorrhea followed by heavy bleeding = alarming sign)
- Dyspareunia (painful intercourse) especially if the fibroid tilting the uterus= alarming sign.
  - It is controversial
  - anterior or fundal fibroids are the most likely to be associated with deep dyspareunia.
  -

"Your clinical sense is your guidance"

- Leiomyoma degeneration or torsion "excruciating pain"
  - (A patient come to the doctor and tell her that she knows that she has fibroid but she can not tolerate the pain. The doctor should think about complications of fibroid, one of them degeneration or torsion especially if she has subserous fibroid)
  - Usually intramural does not cause sever pain.
  - The more sever pain comes with pedunculated fibroid.
  - Infrequently, fibroids cause acute pain from degeneration or torsion of a pedunculated tumor.
  - Pain may be associated with a low grade fever, uterine tenderness on palpation, elevated white blood cell count, or peritoneal signs.
  - The discomfort resulting from degenerating fibroids is self-limited, lasting from days to a few weeks, and usually responds to nonsteroidal antiinflammatory drugs.
- Reproductive dysfunction
  - Leiomyomas that distort the uterine cavity (submucosal or intramural with an intracavitary component) result in difficulty conceiving a pregnancy and an increased risk of miscarriage.
  - Adverse pregnancy outcomes (placental abruption, fetal growth restriction, malpresentation, and preterm labor and birth)
  - Poor vascularity of the endometrium covering the fibroid making the implantation very poor.
  - If the fibroid distorting the endometrial cavity, it could be a cause of defect in fertility. If the woman is lucky to pregnant she will be at risk of IUGR and preterm labour.

Diagnosis:

- Pelvic exam:
  - Bimanual pelvic examination, an enlarged, mobile uterus with an irregular contour
  - Infrequently, on speculum exam, a prolapsed submucosal fibroid may be visible at the external cervical os
- Imaging:
  - Ultrasound
    - Transvaginal ultrasound has high sensitivity (95 to 100 percent) for detecting myomas in uterus less than 10 weeks' size
    - Most widely used modality due to its availability and cost-effectiveness
    - Saline infusion sonography (sonohysterography) improves characterization of the extent of protrusion into the endometrial cavity by submucous myomas
    - What is the first deferential of a large uterus in a reproductive age group? Pregnancy.
    - Always think about normal things then think about the abnormal.
    - The gold standard step to detect submucous fibroids → Saline infusion sonohysterography.
- Diagnostic hystroscopy
  - Office flexible hystroscope to diagnose submucos myoma and extend of protrusion to endometrial cavity (without anesthesia)
- MRI
  - Best modality for visualizing the size and location of all uterine myomas. Due to the expense of this modality, its use is best reserved for surgical planning for complicated procedures.
  - MRI is not a gold standard in evaluation of myoma.
  - A 20-year-old patient has a big fibroid and the doctor wants to take her for surgery. It is important to evaluate how big this fibroid? Where does it locate? How many fibroids? Is it in the endometrial cavity? When the doctor wants to take her to surgery, she will go for a uterine conservative surgery because the patient is young. In this case MRI is needed.
- HSG: (one of the infertility tool measures)
  - Good technique for defining the contour of the endometrial cavity.
  - If you don't have saline sonohysterography but you have HSG and MRI, which one you will use first? You use the cheaper one, which is HSG.

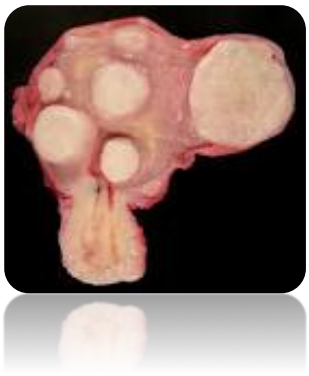
Differential diagnosis:

- Leiomyoma

- Uterine adenomyosis or adenomyoma
- Leiomyoma variant
- Adenomatoid tumors
- Pregnancy
- Hematometra
- Uterine sarcoma
- Uterine carcinosarcoma
- Endometrial carcinoma
- Metastatic disease (typically from another reproductive tract primary
  A 70-year-old patient came with bleeding and large uterus. It is not a fibroid (because it shrink in menopause woman). You have to think about sarcoma.

Pathology:

- Spherical, well circumscribed, white firm lesion with whorled appearance on cut section
- Does not have true capsule… pseudocapsule. (MCQ) (pseudocapsule surround it and there are lymphatic and vascular vessels. When they obstructed or dilated → red degeneration (bleeding inside the fibroid or surrounding the capsule)
- Degenerative changes as the tumor enlarge
  - Hyaline degeneration (Most common)
  - Cystic degeneration
  - Calcification (After menopause)
  - Fatty degeneration (Rare)
  - Red degeneration 5-10% during pregnancy. "Due to high vascularity"



Management: (expectant, medical, surgical and interventional)

- Relief of symptoms is the major goal in management
- The type and timing of any intervention should be individualized, based upon the following factors:
  - Type and severity of symptoms
  - Size of the myoma(s)
  - Location of the myoma(s)
  - Patient age
  - Reproductive plans and obstetrical history
  - Do not manage 20-year-old patient even if she has a 10 cm fibroid for hysterectomy. It is important to preserve her uterus. You can go for myomectomy.
  - Do not tell a patient with 3 cm fibroid and bleeding that the cause of bleeding is the fibroid unless it is submucus fibroid.
  - 3 cm submucus fibroid → bleeding.
  - 3 cm intramural fibroid → no bleeding. If it is reach 10 or 20 cm it can cause bleeding + pelvic pressure symptoms.

- **Expectant:**

  - Can shrink substantially during the postpartum period. (Sudden drop in estrogen level the fibroid will shrink. patient with 8 cm fibroid with an exposure to estrogen during pregnancy it is expected to grow more. When the patient is going to CS for any reason do not be a hero and remove the fibroid, there will be too much bleeding. The causes are: 1st hypervascular status during pregnancy. 2nd thing the fibroid itself is vascular (bleeding surgery). If it is not complicated leave it and observe the patient postpartum it will shrink due to decrease in estrogen level.
  - Initial imaging study (usually an ultrasound) to confirm that a pelvic mass is a fibroid and not an ovarian mass. (As abase line then follow up)
  - Annual pelvic exams and, in patients with anemia or menorrhagia, check a complete blood count. (First thing, it is important to control the bleeding)

- If symptoms or uterine size are increasing, we proceed with further evaluation and patient counseling regarding treatment options.
- Rule out other causes of menorrhgea
  - Hypothyrodism. (Routine evaluation in all patients in reproductive age group, TSH)
  - Bleeding disorders.

❖ **Medical therapy:**

❖ Gonadotropin-releasing hormone agonists
- Most effective medical therapy for uterine myomas.
- Work by initially increasing the release of gonadotropins, followed by desensitization and downregulation to a hypogonadotropic, hypogonadal state that clinically resembles menopause.
- Most women will develop amenorrhea, improvement in anemia and a significant reduction (35 to 60 percent) in uterine size within three months of initiating this therapy.

❖ GnRh agonist side effect
- Rapid resumption of menses and pretreatment uterine volume after discontinuation of GnRH agonists.
- Hot flashes, sleep disturbance, vaginal dryness, myalgias and arthralgias, and possible impairment of mood and cognition [15]. Bone loss leading to osteoporosis after long-term (12+ months) use is the most serious complication and most often limits therapy. (To prevent osteoporosis → give low dose of combined oral contraceptive pills like Climen or Progyluton. It will not affect the fibroid growth and it will protects the bone + Vit D and Ca++)

❖ Used as preoperative therapy.
- GnRH agonists are approved for administration for three to six months prior to leiomyoma-related surgery in conjunction with iron supplementation to facilitate the procedure and enable correction of anemia.
- Reduction in uterine size can facilitate subsequent surgery by reducing intraoperative blood a transverse (rather than vertical) abdominal incision, or a minimally-invasive procedure.
- Shrink the fibroid size.

❖ Gonadotropin-releasing hormone antagonists
- Similar clinical results have been achieved with GnRH antagonists, which compete with endogenous GnRH for pituitary binding sites.
- The advantage of antagonists over agonists is the rapid onset of clinical effects without the characteristic initial flare-up observed with GnRH agonist treatment.

❖ **Interventional radiology:**

- A patient does not want to go for surgery and she did not respond to medical treatment and she is still suffering → use interventional radiology.
- Uterine artery embolization
  - minimally invasive option for management of leiomyoma-related symptoms, excellent technical and clinical success has been reported.
  - It is an effective option for women who wish to preserve their uterus and are not interested in optimizing future fertility. (Also for old women as alternative therapy).
  - UFE results in shrinkage of myomas of approximately 30 to 46 percent

Magnetic resonance guided focused ultrasound: MRI→ estimate the myometrium invasion , hint to plan for surgery.

- More recent option for the treatment of uterine leiomyomas in premenopausal women who have completed childbearing.
- This noninvasive thermoablative technique converges multiple waves of ultrasound energy on a small volume of tissue, which leads to its thermal destruction.

- **Surgical therapy:**

  - Myomectomy
    - Myomectomy is an option for women who have not completed childbearing or otherwise wish to retain their uterus.
    - Disadvantage of this procedure is the risk that more leiomyomas will develop from new clones of abnormal myocytes and bleeding.
    - Hysteroscopic myomectomy is the procedure of choice for removing intracavitary myomas (submucus fibroid specifically)

  - Hystrectomy (definitive treatment of fibroid)
    - Women with acute hemorrhage who do not respond to other therapies
    - Women who have completed childbearing and have current or increased future risk of other diseases.
    - Women who have failed prior minimally invasive therapy for leiomyomas
    - Women who have completed childbearing and have significant symptoms, multiple leiomyomas, and a desire for a definitive end to symptomatology.

Endometrial cancer:

- Epidemiology:
  - Most common gynecological cancer in the developed countries, with an incidence of 12.9 per 100,000 women and a mortality rate of 2.4 per 100,000.
  - In developing countries, it is the second most common gynecologic malignancy, with an incidence of 5.9 per 100,000 and a mortality rate of 1.7 per 100,000.
  - The average age of diagnosis of uterine cancer in the US is 61 years old
  - From ages 50 to 70, women have a 1.4% risk of being diagnosed with uterine cancer
  - Women in the US have a 2.6% lifetime risk of developing uterine cancer

Histological types:

- **Two histologic categories:**
- Type I tumors: (85% of cases)
  - Type I tumors include tumors of endometrioid histology that are grade 1 or 2; these comprise approximately 80 percent of endometrial carcinomas. These tumors typically have a favorable prognosis, are estrogen-responsive, and may be preceded by an intraepithelial neoplasm (atypical and/or complex endometrial hyperplasia).
- Type II tumors: (non endometrioid tumor) (25%) (behave like ovarian cancer when it is papillary serous)
  - Account for 10 to 20 percent of endometrial carcinomas. They include grade 3 endometrioid tumors & serous, clear cell, mucinous, squamous, transitional cell, mesonephric, and undifferentiated. These tumors are often high-grade, have a poor prognosis, and are not clearly associated with estrogen stimulation. A precursor lesion is rarely identified.

Risk factors: The most important thing is the risk factors

- Type I … estrogen dependent tumor
  - Exogenous estrogen
    - Tamoxifen (All patients coming to you taking Tamoxifen for breast cancer in the first evaluation, give them Mirena to prevent endometrial cancer)

        - Unopposed systemic estrogen therapy (progesterone has protective effect of any estrogen. To protect the endometrium from the effect of estrogen it is better to give progesterone in the second half of the cycle or give Mirena)
        - Postmenopausal estrogen therapy
        - Phytoestrogen
    - Endogenous estrogen
        - Chronic anovulation (PCOs)
        - Early menarche --- late menopause
        - Obesity (Fat → estrogen)
        - Estrogen secreting tumors (granulosa cell tumor)
- Family history and genetics predisposition
    - Lynch syndrome (hereditary nonpolyposis colorectal cancer)
        - Autosomal dominant caused by a germline mutation in one of several DNA mismatch repair genes
        - Develop the disease at a young age.
        - Accounts for two to five percent of all endometrial carcinomas.
        - Women with Lynch syndrome, the lifetime risk of endometrial carcinoma is 27 to 71 percent compared with 2.6 percent in the general population
        - Mean age of diagnosis of endometrial cancer 46-54yrs
- BRCA I mutation
    - BRCA1 mutation carriers reported a significant increase in the risk of uterine cancer (RR 2.65, 95% CI 1.69-4.16).
    - Data from a prospective series suggested that the risk of endometrial carcinoma was significantly elevated only for BRCA mutation carriers taking tamoxifen.

Associated factors:

- Nulliparity and infertility
    - The risk of endometrial carcinoma is inversely related to parity.
    - Nulliparity and infertility do not appear to independent risk factors for endometrial carcinoma; instead, the association is probably with the high frequency of anovulatory cycles in infertile women.
    - Data are inconsistent regarding whether ovulation induction for treatment of infertility is associated with an increased risk of endometrial carcinoma.
- Diabetes and hypertension: (DM does not cause endometrial cancer but it is associated with it)
    - Women with diabetes mellitus and hypertension are at increased risk for endometrial carcinoma.
    - Comorbid factors, primarily obesity, account for much of this risk, but some studies have found independent effects, as well.
    - The risk of developing endometrial carcinoma is higher in type 2 than type 1 diabetics. Diets high in carbohydrates and associated hyperinsulinemia, insulin resistance, and elevated levels of insulin-like growth factors may play a role in endometrial proliferation and development of endometrial carcinoma; this is an area of active investigation
- Breast cancer
    - A history of breast cancer is a risk factor for development of endometrial carcinoma, clearly in women treated with tamoxifen

Protective factors:

- Hormonal contraceptives
    - The use of estrogen-progestin oral contraceptives (OCs) (combined) decreases the risk of endometrial carcinoma by 50 percent or higher. Estrogen alone is causing cancer.
    - The benefit of hormonal contraceptives is likely due to the progestin (only) component, which suppresses endometrial proliferation.

- Studies have found that progestin-only contraceptives provide endometrial protection against development of endometrial neoplasia

- Increasing age at last birth
  - Childbearing at an older age, independent of parity and other factors, was associated with a decreased risk of endometrial carcinoma. As an example, women who last gave birth at age 35 to 39 years had a 32 percent decrease in risk (95% CI 0.61-0.76).
- Smoking
  - Cigarette smoking is associated with a decreased risk of developing endometrial carcinoma in postmenopausal women
- Physical activity
- Coffee and tea.

Clinical presentation/ manifestation:

- Abnormal uterine bleeding
  - Suspicion of the presence of endometrial neoplasia (neoplastic endometrial hyperplasia or carcinoma) depends upon symptoms, age, and the presence of risk factors.
  - Abnormal uterine bleeding is present in approximately 75 to 90 percent of women with endometrial carcinoma but only 10 % of patients with bleeding are diagnosed with endometrial cancer because the most common cause of postmenopausal bleeding is atrophy.
  - The amount of bleeding does not correlate with the risk of cancer.
  - A 45-year-old patient, infertile, she has PCO and started the treatment. She now has bleeding. Endometrial biopsy done for her → cancer
  - Any patient >35-year-old presenting with abnormal bleeding → consider endometrial biopsy in the work up.
- Postmenopausal women
- Any bleeding, including spotting or staining. Three to 20 percent of women with postmenopausal bleeding are found to have endometrial carcinoma and another 5 to 15 percent have endometrial hyperplasia. (IMP)
- Age 45 to menopause
  - Any abnormal uterine bleeding, among cases of endometrial carcinoma, 19 percent occur in women aged 45 to 54 years compared with 6 percent in those aged 35 to 44 years.
- Younger than 45 years
  - Abnormal uterine bleeding that is persistent, occurs in the setting of a history of unopposed estrogen exposure (obesity, chronic anovulation) or failed medical management of the bleeding, or in women at high risk of endometrial cancer (Lynch syndrome) → you have to do endometrial biopsy.
- Abnormal PAP smear:
  - Adenocarcinoma – Adenocarcinoma is sometimes seen on cervical cytology. Since the malignant cells may arise from either the cervix or endometrium, further evaluation with cervical and endometrial biopsy is required.
  - Atypical glandular cells - Atypical glandular cells detected by cervical cytology should be investigated with an endometrial (and endocervical) biopsy to determine whether an endometrial neoplasm is the cause.
  - Endometrial cells – The presence of endometrial cells on cervical cytology is reported in the results in women ≥40 years of age. The appearance of normal endometrial cells on cytology in asymptomatic premenopausal women is rarely associated with pathology and no further work-up is required.
- Incidental finding on imaging
  - A thickened endometrial lining is sometimes found incidentally on ultrasound, computed tomography (CT), or magnetic resonance imaging (MRI) performed for another indication.
  - Endometrial thickening in postmenopausal woman not exceeding 3 mm.
- Incidental finding at hysterectomy
  - Endometrial carcinoma or hyperplasia is sometimes discovered incidentally when hysterectomy is performed for benign disease.

- Prior to hysterectomy, all women with abnormal uterine bleeding should have endometrial sampling (biopsy) to rule out cancer.

Work up:

- Calm the patient, reassure her, treat her and protect her.
- Endometrial sampling
  - Office endometrial biopsy.
  - Can be performed without anasthesia.
- D&C in some women.
  - Cannot tolerate an office biopsy
  - Those with heavy bleeding (D&C is both a diagnostic and therapeutic procedure),
  - Hysteroscopy with D&C to ensure that focal lesions are identified and biopsied.
- Both give the same specificity and sensitivity.

What about screening:

- Routine screening is not advisable except for women known with Lynch syndrome and if they are still bleeding.

Management:

- Endometrial cancer is surgically staged disease while cervical cancer is clinically staged disease
- Further management depends on the stage
- Basic surgery include
  - Total hystrectomy
  - Bilateral salpengo-oherectomy
  - Bilateral pelvic lymphadenectomy
  - Para-aortic lymphadenectomy
  - Omentectomy and peritoneal washing in type II

Preoperative work up:

- In endometrial biopsy
  - Tumor histology type (endometrioid, papillary serous or carcinosarcoma)
  - Tumor grade
    - Risk of lymph node involvement
      - G1 3% Pelvic… 2% aortic
      - G2 9% pelvic…5% aortic
      - G3 18% pelvic… 11% aortic

FIGO stage:

- Stage I
  - Tumor confined to the uterus
    - IA.. Less than 50% myometrial invasion
    - IB … more than 50% myometrial invasion
- Stage II
  - Invading cervical stroma but does not extend beyond the uterus
- Stage III
  - Tumor extend beyond the uterus
    - IIIA… serosa of the uterus and or adnexa
    - IIIB …vagina or parametrial involvement
    - IIIc…lymph nodes

- IIIc1 pelvic lymph nodes
- IIIc2 para-aortic lymph nodes

❖ Stage IV
  - IVA… bladder or bowel mucosa (If it is not invading the mucosa it is not considered metastatic to the bowel)
  - IVB… abdominal metastasis or inguinal lymph node

Why we need to stage? For treatment and prognosis.

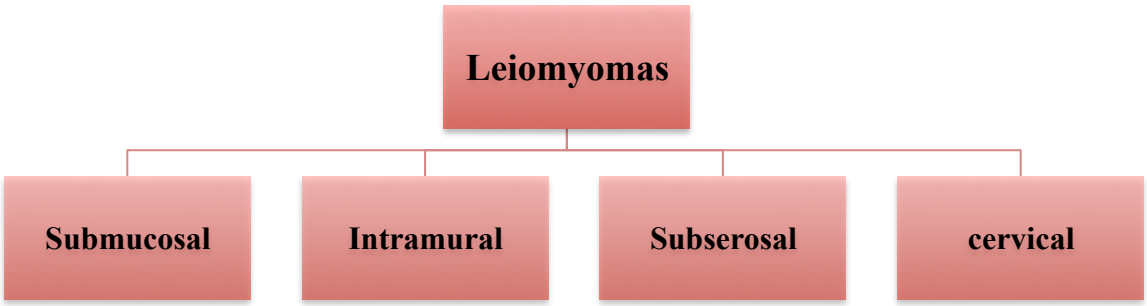
Endometrial cancer → if stage 1A (85% of patients in this stage) → treatment is surgical and the prognosis 5 years survival reaching up to 95%.

When to give radiation:

❖ Types of radiation
  - External beam radiotherapy
  - Brachytherapy (put a device through the vagina and give a radiation)

Summary:

-Endometrial neoplasm includes both benign and malignant.
***Leiomyomas** (Benign) are the most common neoplasm of the uterus.
-**Types of leiomyoma**:



- **Risk factors include**: race (more in black women), menstrual history and parity, hormonal contraception, heredity, ovulation induction agent, obesity, diet, caffeine, alcohol and smoking.
- **Clinical manifestation**: Heavy or prolonged menstrual bleeding, Pelvic pressure and pain, Leiomyoma degeneration or torsion and Reproductive dysfunction.
- Diagnosis: pelvic exam, imaging, Diagnostic hysteroscopy, MRI and HSG.
-**Differential diagnosis**: leiomyoma, uterine adenomyosis or adenomyoma, leiomyoma variant, adenomatoid tumors, pregnancy, hematometra, uterine sarcoma, uterine carcinosarcoma, endometrial carcinoma, metastatic disease.
-**Pathology:** Spherical, well circumscribed, white firm lesion with whorled appearance on cut section, does not have true capsule (pseudocapsule).
-**Management:** expectant (Relief of symptoms is the major goal in management), medical, surgical and interventional.

***Endometrial cancer:**
-Histological types

Type I	Type II
Endometrioid tumors	Non endometrioid tumors
85% of cases	25% of cases
Estrogen dependent	Non estrogen dependent
Favorable prognosis	Poor prognosis

-Risk factors for type I: exogenous and endogenous exposure to estrogen, family history and genetics predisposition (Lynch syndrome) and BRCA I mutation.
- **Associated factors:** nulliparity and infertility, diabetes and hypertension and breast cancer.
- **Protective factors:** hormonal contraceptives, increasing age at last birth, smoking, physical activity, coffee and tea.
- **Clinical presentation/ manifestation:** abnormal uterine bleeding, postmenopausal bleeding, age 45 to menopause, younger than 45 years, abnormal PAP smear, incidental finding on imaging and incidental finding at hysterectomy.
- **Work up:** calm the patient, reassure her, treat her and protect her. Endometrial sampling or D&C (Cannot tolerate an office biopsy).
- **Management:** endometrial cancer is surgically staged disease. Basic surgery include: Total hysterectomy, bilateral salpengo-oherectomy, bilateral pelvic lymphadenectomy, para-aortic lymphadenectomy, omentectomy and peritoneal washing in type II.