



- **Terminologies:**

- **Amenorrhea** = absence of menstruation.
- **Menarche:** is the first menstrual cycle experienced by a female occurring as early as the age of 9 years.
- **Menopause:** absence of menstruation for more than 12 months (1 year).
- **Pre-menopausal period:** 2-5 years before actual menopause when the menstrual cycle becomes eclectic with varying periods of amenorrhea until it completely disappears.

- **There are two types of amenorrhea:**

- **Primary:** in which a woman never experienced menstruation before.
 - ✓ If there is no menstruation but secondary female sexual characteristics are present → wait until the age of 16 → if still there is no menstruation → start your investigations.
 - ✓ If there is no menstruation and no secondary female sexual characteristics at the age of 14 → start your investigations to determine the cause.
- **Secondary:** in which a woman used to get her periods but then menstruation stopped for some reason.

- **Always remember than the most common cause of amenorrhea is pregnancy.** Therefore, when a female presents to your clinic complaining of amenorrhea → you must confirm that she is not pregnant by checking β -hCG levels.

- **Before investigating the causes of amenorrhea** → always define if the patient has a normal genetic constitution (is that human in front of me a male or a female?), check for the presence of internal genital organs and if gonads are ovaries or testicles.

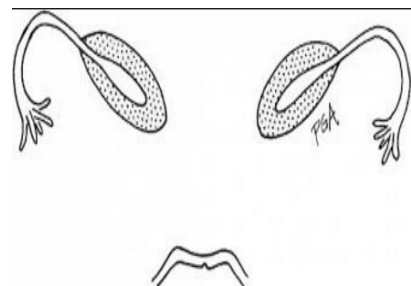
- **When is amenorrhea considered to be physiological?**

- Before menarche (Pre-pubertal period).
- During pregnancy.
- Lactation amenorrhea: which is considered as a method of contraception.
- Menopause.

- **Classification of causes of amenorrhea:**

• **Reproductive outflow tract abnormalities:**

- ✓ **Mullerian agenesis:**
 - ❖ It causes primary amenorrhea.
 - ❖ Mullerian ducts are not formed. Therefore, upper 2/3 of vagina, cervix, uterus and fallopian tubes will not be present. Notice that the lower 1/3 of vagina will be present because it develops from ectoderm.
 - ❖ Ovarian function is normal.
 - ❖ Normal female with normal secondary sexual characteristics.
- ✓ **Transverse vaginal septum:**
 - ❖ It causes cyptomenorrhea in which menstruation occurs but it is not visible due to an obstruction of the outflow tract.
 - ❖ Etiology: failure of lower 1/3 of vagina to canalize.
 - ❖ Genetic constitution: 46, XX
 - ❖ Ovarian function is normal.





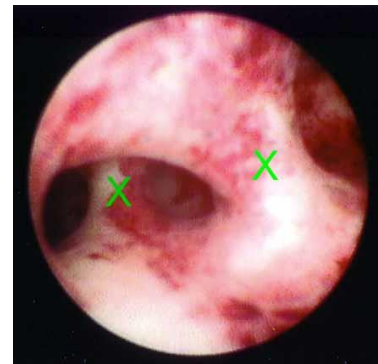
- ✓ Testicular feminization syndrome:
 - ❖ Defect in androgen receptors resulting in normal-appearing female.
 - ❖ Female external genitalia with rudimentary vagina.
 - ❖ Uterus and fallopian tubes are generally absent.
 - ❖ Testes are present with ↑testosterone and LH.
 - ❖ Genetic constitution: 46,XY

- ✓ Imperforate hymen:
 - ❖ It causes cryptomenorrhea.
 - ❖ Etiology: absence of hymen canalization.
 - ❖ Normal ovaries, internal and external genitalia, and secondary female sexual characteristics.
 - ❖ Blood is collecting in vagina and extending to reach the uterine cavity thus causing abdominal pain and distention.
 - ❖ Physical examination shows: bluish discoloration of the hymen and enlarged uterus due to hematometria.



- ✓ Cervical stenosis:
 - ❖ It is a rare cause of secondary amenorrhea.
 - ❖ Stenosis occurs after a cervical surgery, radiation therapy, cervical infection or deep cervical cauterization.
 - ❖ Diagnosis is based on clinical findings.

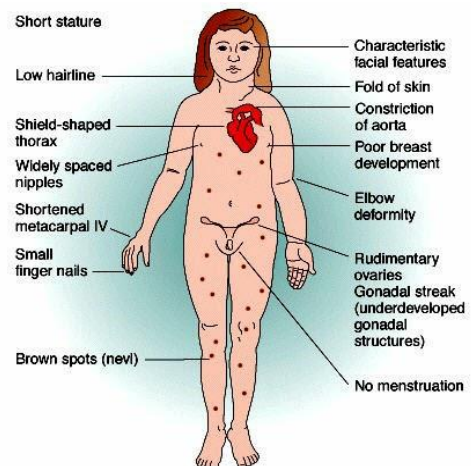
- ✓ Asherman's syndrome:
 - ❖ It causes secondary amenorrhea.
 - ❖ Etiology: intrauterine adhesions occurring after vigorous uterine curettage.
 - ❖ Diagnosed by:
 - Hysteroscopy.
 - Hysterosalpingography.



• **Ovarian disorders:**

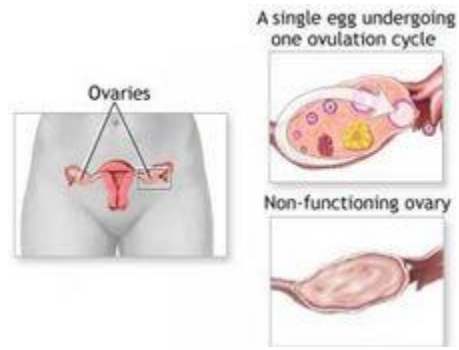
- ✓ True gonadal dysgenesis:
 - ❖ It causes primary amenorrhea.
 - ❖ Etiology: failure of migration of germ cells.
 - ❖ Genetic constitution: 46,XX or 46,XY.
 - ❖ Internal and external genitalia of a female are infantile.
 - ❖ Investigations show: ↑FSH and LH
 - ❖ Diagnosis by: laparoscopy.

- ✓ Tuner syndrome (X):
 - ❖ It causes primary amenorrhea.
 - ❖ Genetic constitution: 45,XO
 - ❖ Characterized by: undifferentiated gonads, short stature, webbed neck, cardiac problems and other features.
 - ❖ Investigations will show: ↑FSH and LH.
 - ❖ Diagnosis: chromosomal study

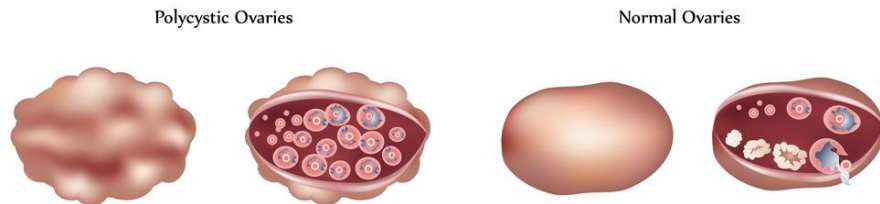




- ✓ Premature ovarian failure:
 - ❖ It causes secondary amenorrhea (early menopause before the age of 40 years!).
 - ❖ Etiology: familial, irradiation, chemotherapy and autoimmune diseases.
 - ❖ Investigations will show: ↑FSH and LH



- ✓ Resistant ovary syndrome:
 - ❖ Hormonal receptors Which are supposed to be found in ovaries are absent.
- ✓ Anovulation:
 - ❖ The most common form is Polycystic Ovarian Syndrome (PCOS).
 - ❖ Chronic anovulation may result in oligomenorrhea and eventually amenorrhea.



- **Pituitary disorders:**

- ✓ Pituitary adenomas:
 - ❖ The most common being prolactinoma which results in hyperprolactinemia that leads to secondary amenorrhea.
 - ❖ Investigations will show: ↑prolactin level
 - ❖ Diagnosis through: CT-scan or MRI. Notice that adenomas large in size might compress on the optic chiasma leading to visual disturbance.
 - ❖ Treatment: cabergoline (bromocriptine is not used anymore due to its adverse effects).
- ✓ Sheehan's syndrome:
 - ❖ It causes secondary amenorrhea.
 - ❖ It is considered as a complication of postpartum hemorrhage. Severe low blood pressure deprive the body of oxygen and causes damage to the pituitary gland → hypopituitarism.
 - ❖ Investigations will show: ↓pituitary hormones.
 - ❖ Diagnosis: the lady will present to your clinic complaining of inability to lactate!

- **Hypothalamus disorders:**

- ✓ Functional hypogonadotropic hypogonadism:
 - ❖ It causes secondary amenorrhea.
 - ❖ Occurring in those ladies who exercise vigorously (athletes) thus they will lose their period.
 - ❖ At least 17% of body fat is required for initiation of menses and 20% to maintain it.

- **Emotional stress.**

- **Weight loss:** amenorrhea occurs when weight is 15-20% below the ideal body weight.
- **Pseudocyesis الحمل الكاذب:** false pregnancy associated with ↑LH and prolactin. These cases are not seen anymore especially after ultrasound was introduced to the medical field.
- **Drug-induced amenorrhea:** depoprovera, danazol, GnRH agonists and post-pills.



- **Other endocrine disorders include:**
 - ✓ Hypothyroidism: ↑TSH and prolactin.
 - ✓ Cushing's syndrome.
 - ✓ Congenital adrenal hyperplasia:
 - ❖ It causes primary amenorrhea.
 - ❖ 21-hydroxylase deficiency → ↑androgens → virilization.