

Reproductive

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Polycystic ovarian disease



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7th Lecture

Polycystic Ovarian Disease (PCOD)

- Polycystic ovaries are characterized by **bilaterally** enlarged polycystic ovaries, **chronic anovulation** and clinical manifestations **secondary to excessive production of estrogens and androgens, mainly androgens.**
- The initial abnormality resulting in the syndrome is not known but is believed to be related to **hypothalamus-pituitary dysfunction leading to over secretion of luteinizing hormone (LH).**
- LH in turn stimulates the ovary to produce excess androgens. Secretion of follicle stimulating hormone (**FSH**) **is inhibited** resulting in repression of ovulation with follicle cyst formation.
- Test shows **High level of LH and low FSH MCQ**
- Other names for this syndrome include polycystic ovarian syndrome and **Stein-Leventhal syndrome → IMP**

No progesterone

High estrogen & androgen

Clinical Appearances:

The usual clinical presentation is a **young woman** (between **15 and 30 years**) with

- **Secondary amenorrhea** with **anovulation**
- Oligomenorrhea or **irregular** menses
- **Infertility**
- **Hirsutism** → **excess hair (male pattern)**
- Virilism due to **excessive** amounts or effects of **androgenic** (masculinizing) **hormones**
- Obesity → **30% with PCO over weight**
- Acne

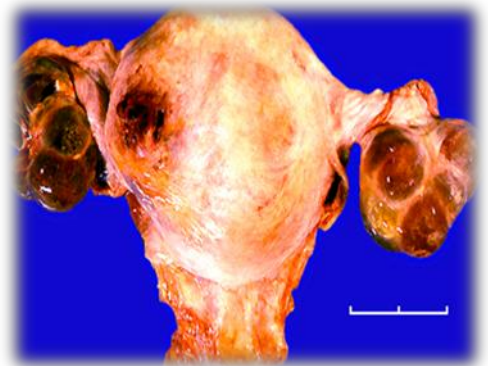
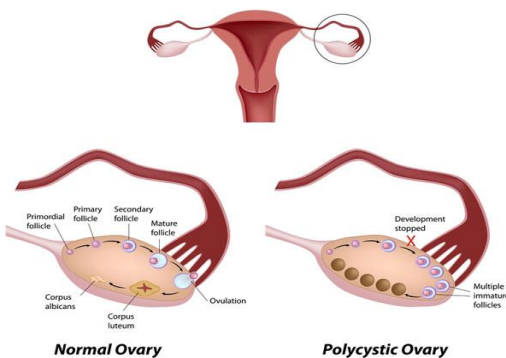
Primary amenorrhea → 16 year old female hadn't experienced the menarche.

Secondary amenorrhea → female had a menarche but then the period stopped. (irregular).

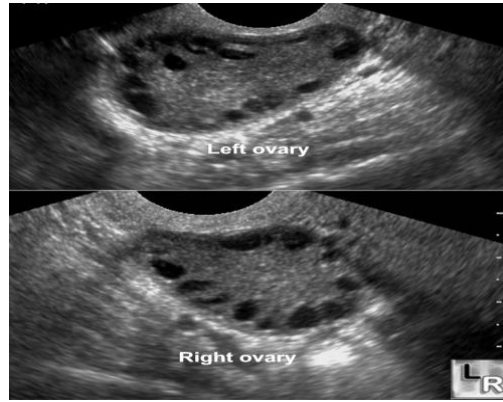
High Androgens → No Ovulation → No Corpus Luteum

Grossly:

Both ovaries are markedly enlarged usually twice normal in size and have a thickened, fibrotic gray white capsule with smooth pearl-white outer surface, studded with sub cortical cysts 0.5 to 1.5 cm in diameter.



Dilated follicular cyst

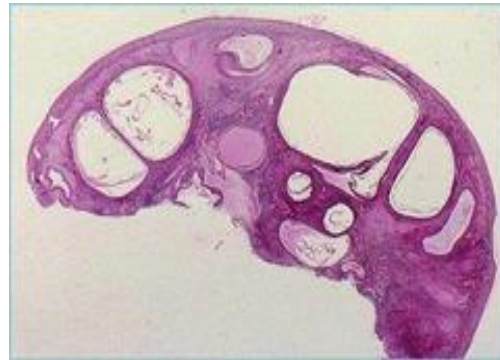


Multiple holes & dark spots

Histology:

- Microscopically, the outer portion of the cortex is thickened and fibrotic.
- Many follicle cysts lined by **granulosa** cells are present in the subcapsular cortex. **The cysts have prominent outer theca interna layer**, which is often luteinized.
- **Corpora lutea are frequently absent** due to the anovulation and occasional focal stromal luteinization is present.
- Cortical stromal fibrosis
- The chronic anovulation results in unopposed estrogenic stimulation of the endometrium leading to a variety of appearances ranging from mild **atypical hyperplasia (predispose to)** well-differentiated **endometrial adenocarcinoma**

Cyst pushed in medulla + hypertrophy of stroma.




Clinical behavior:

- 1- Treatment with drugs that either **induce ovulation (clomiphene or hCG)** or **regulate the menstrual cycle restores fertility**.
- 2- **Reduction of ovarian volume (because there is hormonal overload)** by wedge resection is also successful in initiating ovulation and **restoring fertility**. (**If we remove the whole ovary → infertile (in severe cases)**)

The endometrial changes usually regress once ovulation is achieved.

Polycystic Ovaries Stein-Leventhal Syndrome

Women with PCOS are at risk for the following:

- Endometrial hyperplasia and endometrial cancer
 - Insulin resistance/Type II diabetes
 - High blood pressure
 - Depression/Anxiety
 - Dyslipidemia → high cholesterol predispose to 
 - Cardiovascular disease
 - Strokes
 - Weight gain
 - Miscarriage → due to hormone imbalance.
 - Acanthosis nigricans (patches of darkened skin under the arms, in the groin area, on the back of the neck)
 - Autoimmune thyroiditis.
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Endometriosis:

- This is the presence of ectopic endometrial glands and stroma **outside** the uterus.
- The lesions are usually found on the peritoneal surfaces of the reproductive organs and adjacent pelvic organs.
 - The most frequent location is the ovary (approx. 50%) followed by the pouch of Douglas, uterine ligaments. Occasional sites include the cervix, vagina, perineum, bladder, large bowel and the umbilicus. Rare lesions are seen as far as small bowel, kidneys, lungs and brain. (If it is present in nasal mucosa of the female → every time she has a period she will bleed from her nose)
- It has been reported in men. The sites involved have been the bladder, scrotum and prostate (rare)
- **Non-neoplastic:** because it represents the endometrium as a whole (including Glands & Stroma), IMP.
- Like the uterine endometrium it is responsive to the hormonal variations of the menstrual cycle.
- It is characterized by menstrual type bleeding at the site of the ectopic endometrium, resulting in blood filled areas (e.g. chocolate cysts). Ugly mass of brown structure collect in ovary.
 - * Pouch of douglas → in the process of healing (inflammation/fibrosis) there will be adhesion → un comfortable situation (harmful and painful)

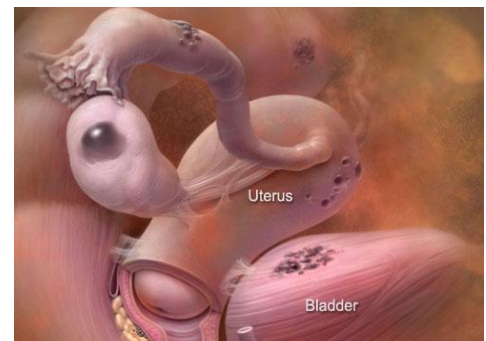
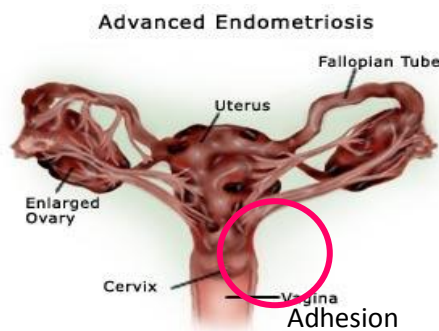
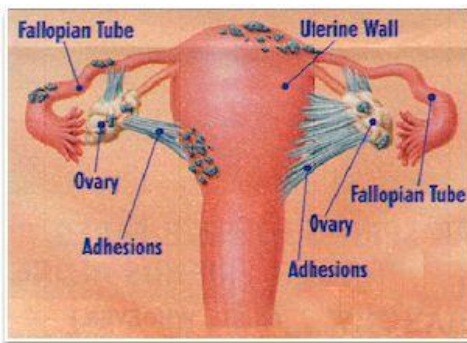
Clinical Appearances:

- Clinical presentation depends **on the site of endometriosis**.
- **Dysmenorrhea, cyclic abdominal pain** and dyspareunia are **common symptoms**. Usually there is severe menstrual-related pain.
- Often **results in infertility**: because of the adhesions in the ovary.
- Endometriosis usually appears as multiple red or **brown** (due to hemosiderin) **1mm to 5mm nodules** (some may form larger masses or cysts). Dense **fibrous adhesions may surround the foci**.
- Repeated hemorrhage into foci in the **OVARY with each menstrual cycle produces cysts**, which contain inspissated, **chocolate-brown material, called "CHOCOLATE CYST"** in which the ovaries turn into large cystic masses filled with brown fluid

Clinical Behavior:

Benign with no malignant potential. May **recur** after surgical excision but **the risk is low**.

- If seen in the **abdomen**, it can be **misdiagnosed as a Metastatic Adeno-Carcinoma!**



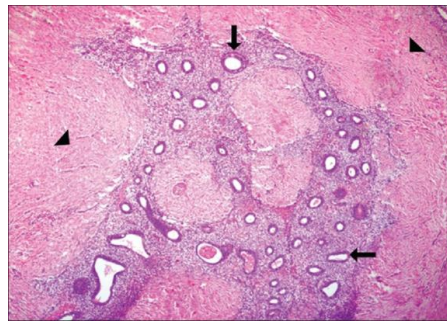
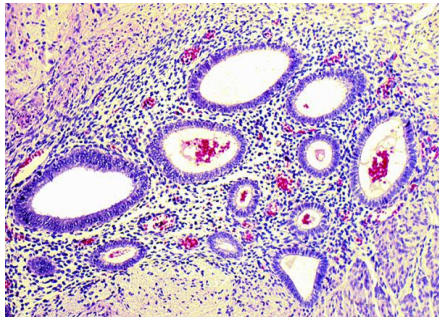
Chocolate Cyst of Ovary (Endometriotic Cyst)



Histology:

- Microscopic diagnosis of endometriosis is made by the presence of ectopic **endometrial glands and stroma**. **Macrophages containing hemosiderin (siderophages)** may be present in lesions with **previous hemorrhage**.

When endometriosis develops in a muscular viscus, the smooth muscle around it is often hyperplastic. (if it is in large intestine → atrophy(constipation))



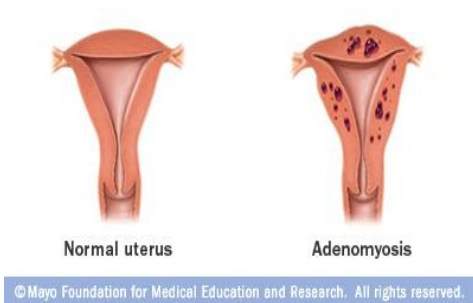
Adenomyosis: (another type of Endometriosis: occurring within the Myometrium)

- This is defined as the presence of **endometrial glands and stroma in the myometrium**. The condition involves the **posterior wall more often** than the anterior wall but it may affect both walls in the same uterus.
- The disease is primarily a **disorder of parous women (common in women who had delivered) and occurs infrequently in the nullipara**.
- **Associated with menorrhagia and severe dysmenorrhea**. In about a third of patients there are **no symptoms** and the lesions are discovered **accidentally**.
- When extensive the lesions produce **myometrial thickening with small yellow or brown cystic spaces containing fluid or blood**.
- Occasionally, a proliferation of smooth muscle around a focus of adenomyosis produces a tumor called adenomyoma, which resembles uterine leiomyoma.

Clinical behavior:

This is a **benign** condition with **no known malignant potential that regresses after the menopause**.

- **We can have combination of endometriosis and adenomyosis.**



Summary from Robbins

-Endometriosis refers to location of endometrial glands and stroma outside the uterus and may involve the pelvic or abdominal peritoneum, and sometimes distant sites like lymph nodes and lungs.

-The ectopic endometrium in endometriosis undergoes cyclinical bleeding and is a common cause of dysmenorrhea and pelvic pain.

-Adenomyosis refers to growth of endometrium into the myometrium with uterine enlargement. Unlike endometriosis there is no cyclinical bleeding.

-Endometrial hyperplasia results from an excess of estrogen, whether endogenous or exogenous.

-Risk factors for developing hyperplasia include anovulatory cycles, polycystic ovary syndrome, estrogen-producing ovarian tumor, obesity, and hormone intake.

- The severity of hyperplasia is graded by architectural and cytologic criteria. Complex architecture associated with cytologic atypia has 20% risk of developing carcinoma.

Questions:

1/ Regarding Polycystic Ovarian Disease :

- A – Involvement is bilateral.
- B – High levels of FSH.
- C – Low levels of LH.
- D – Patients are usually over 50 years of age.

2/ Microscopically, Polycystic Ovarian Disease has which one of the following features:

- A – Thickened and fibrotic cortex.
- B – Numerous corpus luteum.
- C – Stroma undergone lyses by macrophages/
- D – All of the above.

3/ Regarding Endometriosis:

- A – The most common location is the Pouch of Douglas.
- B – It is a neoplastic disease.
- C – Can cause chocolate cyst.
- D – Never happens in the ovaries.

4/ Regarding Adenomyosis:

- A – Presence of endometrial gland and stroma in the myometrium.
- B – Involves the posterior wall more often than the anterior wall.
- C – It happens more commonly in parous women.
- D – All of the above.

Answers:

A. A. C. D.