

Polycystic Ovarian Disease and Endometriosis

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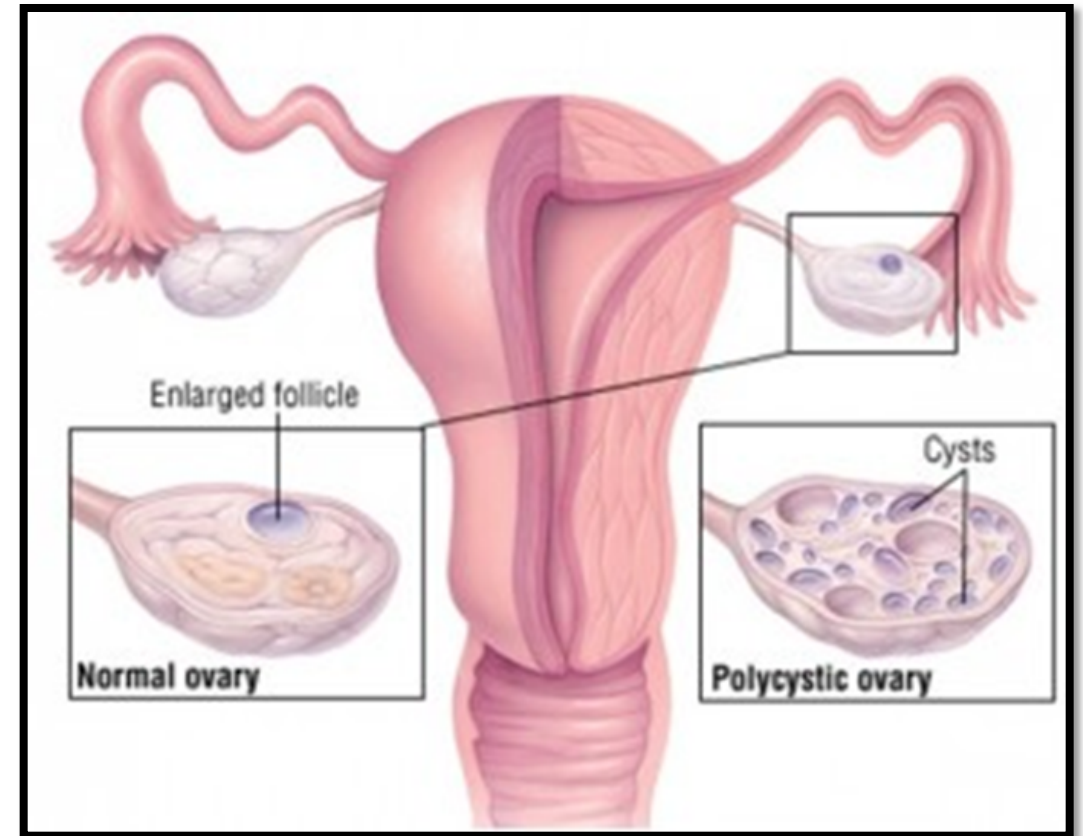
Objectives

At the end of this lecture, the student should be able to:

- Know the clinicopathologic features of endometriosis with special emphasis on: definition, typical sites and theories behind its pathogenesis.
- Understand the clinical manifestations and pathologic features of polycystic ovarian disease.

Polycystic Ovarian Disease

- It is characterized by bilateral enlargement of ovaries with multiple small cysts, chronic anovulation and clinical manifestations secondary to excessive production of estrogens and androgens, mainly **androgens**.
- Other names for this disease include **polycystic ovarian syndrome** and **Stein-Leventhal syndrome**.



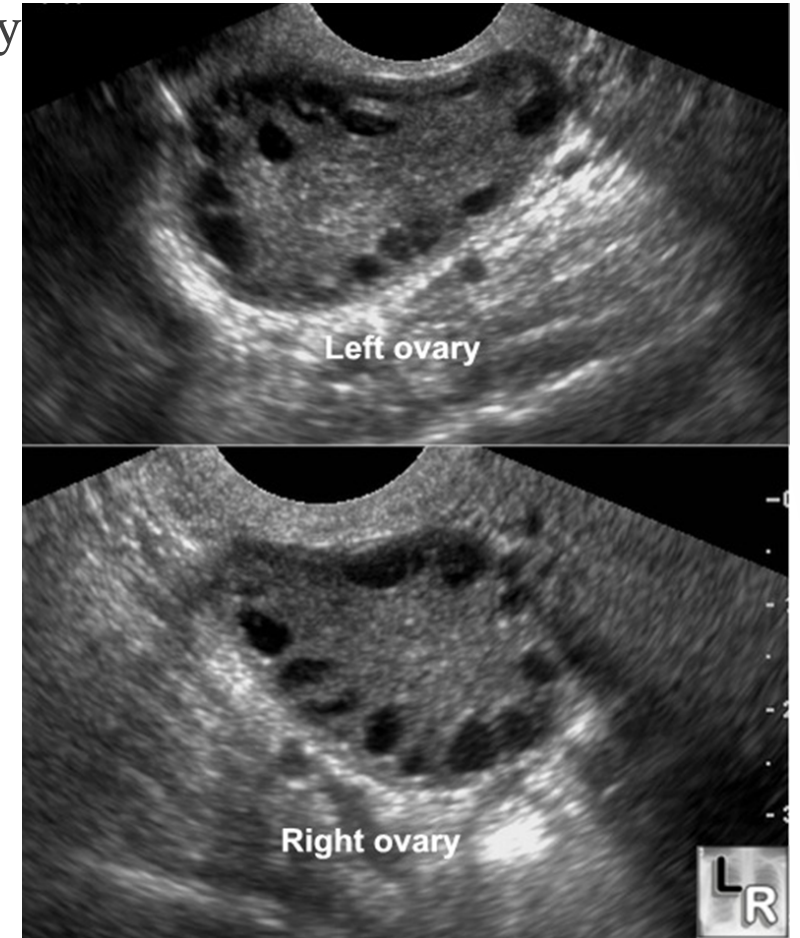
Polycystic Ovarian Disease

- The initial abnormality resulting in the syndrome is not known but is believed to be related to hypothalamus-pituitary dysfunction leading to oversecretion of luteinizing hormone (LH).
- LH in turn stimulates the ovary to produce excess androgens. The secretion of follicle stimulating hormone (FSH) is inhibited → leading to suppression of ovulation and formation of cystic follicles in the ovary.
- Patients have:
 - high levels of LH
 - low FSH
 - high testosterone
 - high estrogen



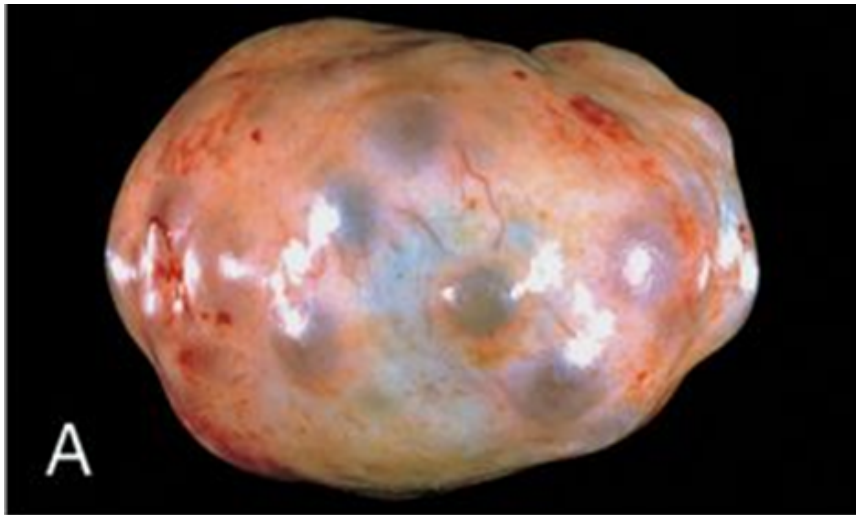
Clinical Presentation

- It usually affects young women (between 15 and 30 years) and they present with:
 - secondary amenorrhea with anovulation
 - oligomenorrhea or irregular menses
 - infertility
 - hirsutism
 - virilism due to increased androgenic (masculinizing) hormones
 - obesity
 - acne



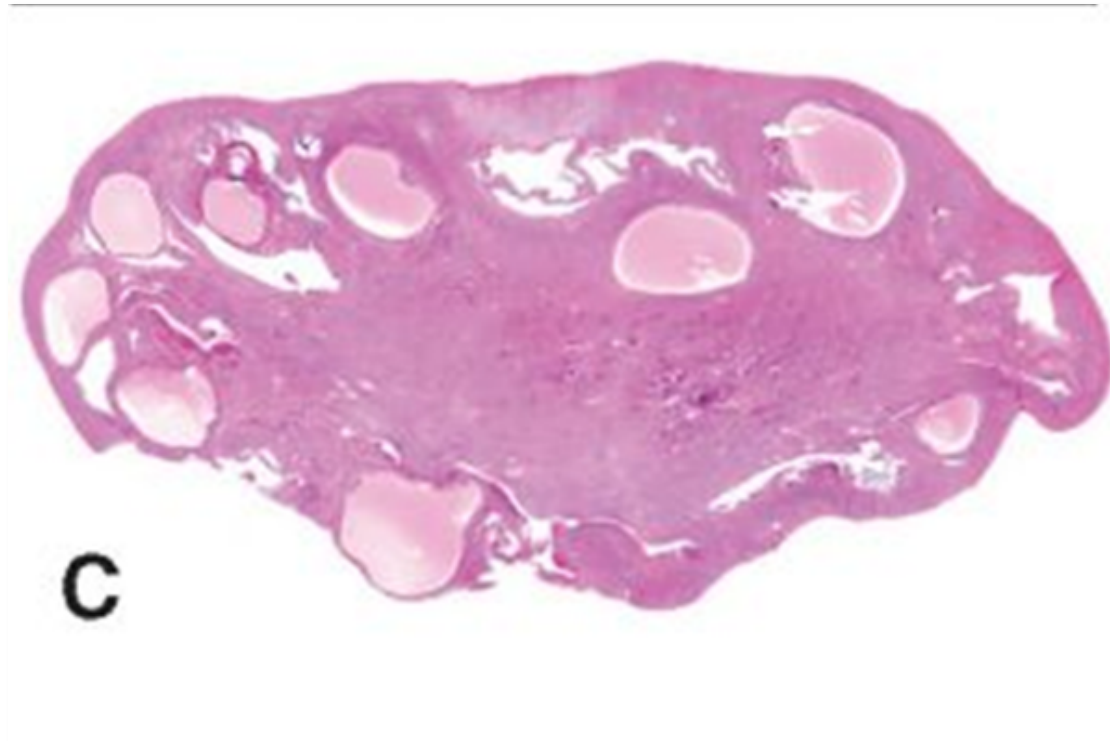
Polycystic Ovarian Disease

- A: The ovarian surface reveals numerous nodular elevations of clear cysts.
- B: The cut section shows several subcortical cystic follicles in the ovary.



Polycystic Ovarian Disease

- C: Cystic follicles seen in a low-power microphotograph.



Microscopic Features

- Ovaries:
 - The ovaries are 2 times the normal size with many subcortical cysts measuring 0.5 to 1.5 cm in diameter.
 - The outer portion of the cortex is thickened and fibrotic (cortical stromal fibrosis) with multiple cysts underneath. The follicular cysts usually have a prominent theca interna layer.
 - Corpora lutea are frequently absent (No ovulation occurs, women with PCOD have anovulatory cycles).

Microscopic Features



Microscopic Features

- Endometrium:
 - Chronic anovulation → unopposed estrogen → hyperestrogenic state → endometrium may develop estrogen associated hyperplasia and show any of the following:
 - simple with or without atypia
 - complex hyperplasia, with or without atypia
 - or even endometrial adenocarcinoma

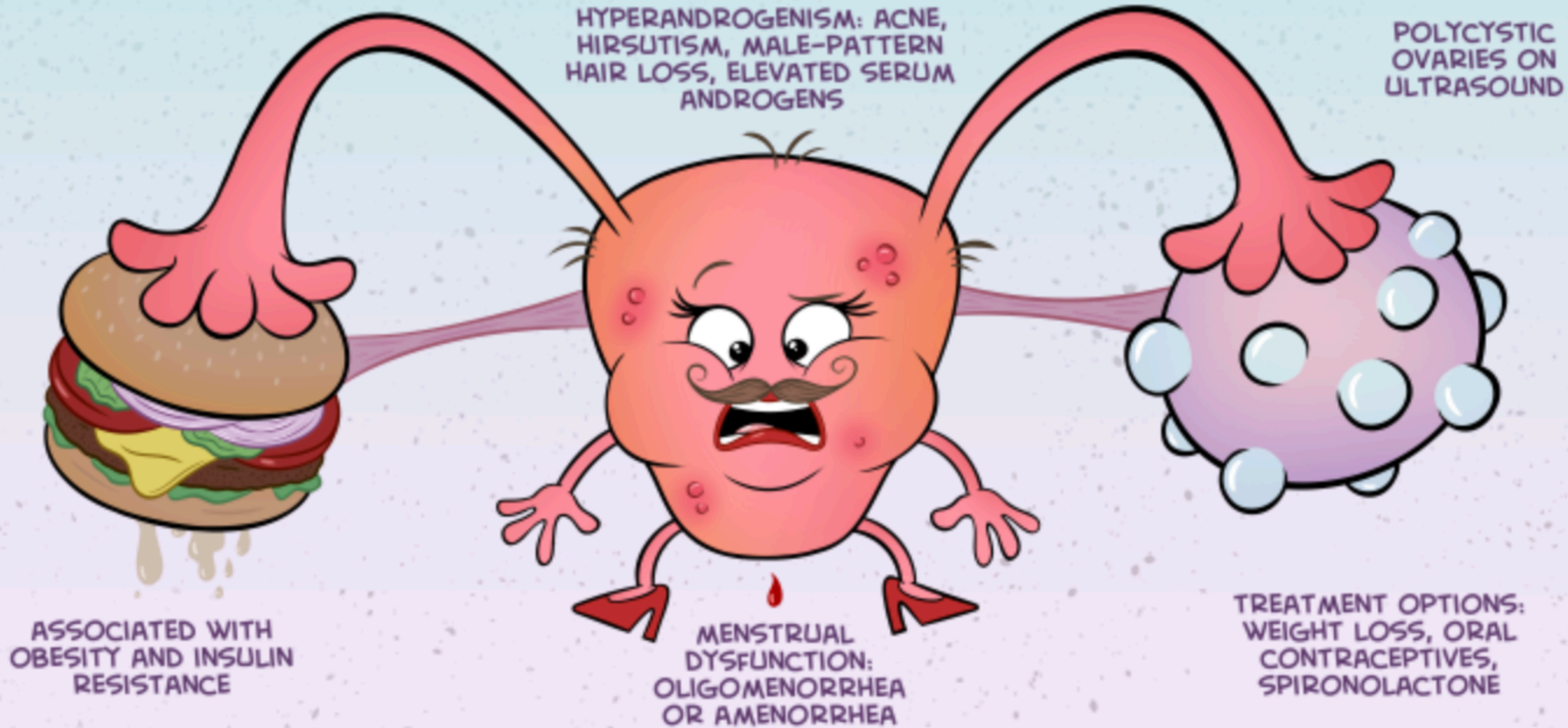
Polycystic Ovarian Disease

- **Women with PCOD are at risk of the following:**
 - Endometrial hyperplasia and endometrial cancer
 - Insulin resistance/Type II diabetes
 - High blood pressure
 - Depression/Anxiety
 - Dyslipidemia
 - Cardiovascular disease
 - Strokes
 - Weight gain
 - Miscarriage
 - Acanthosis nigricans (patches of darkened skin under the arms, in the groin area and on the back of the neck)
 - Autoimmune thyroiditis

Polycystic Ovarian Disease

- Treatment with drugs that either induce ovulation (clomiphene or hCG) or regulate the menstrual cycle restores fertility.
- Reduction of ovarian volume by wedge resection of the ovaries is also successful in initiating ovulation and restoring fertility.
- The endometrial changes usually regress once ovulation is achieved.

POLYCYSTIC OVARIAN SYNDROME

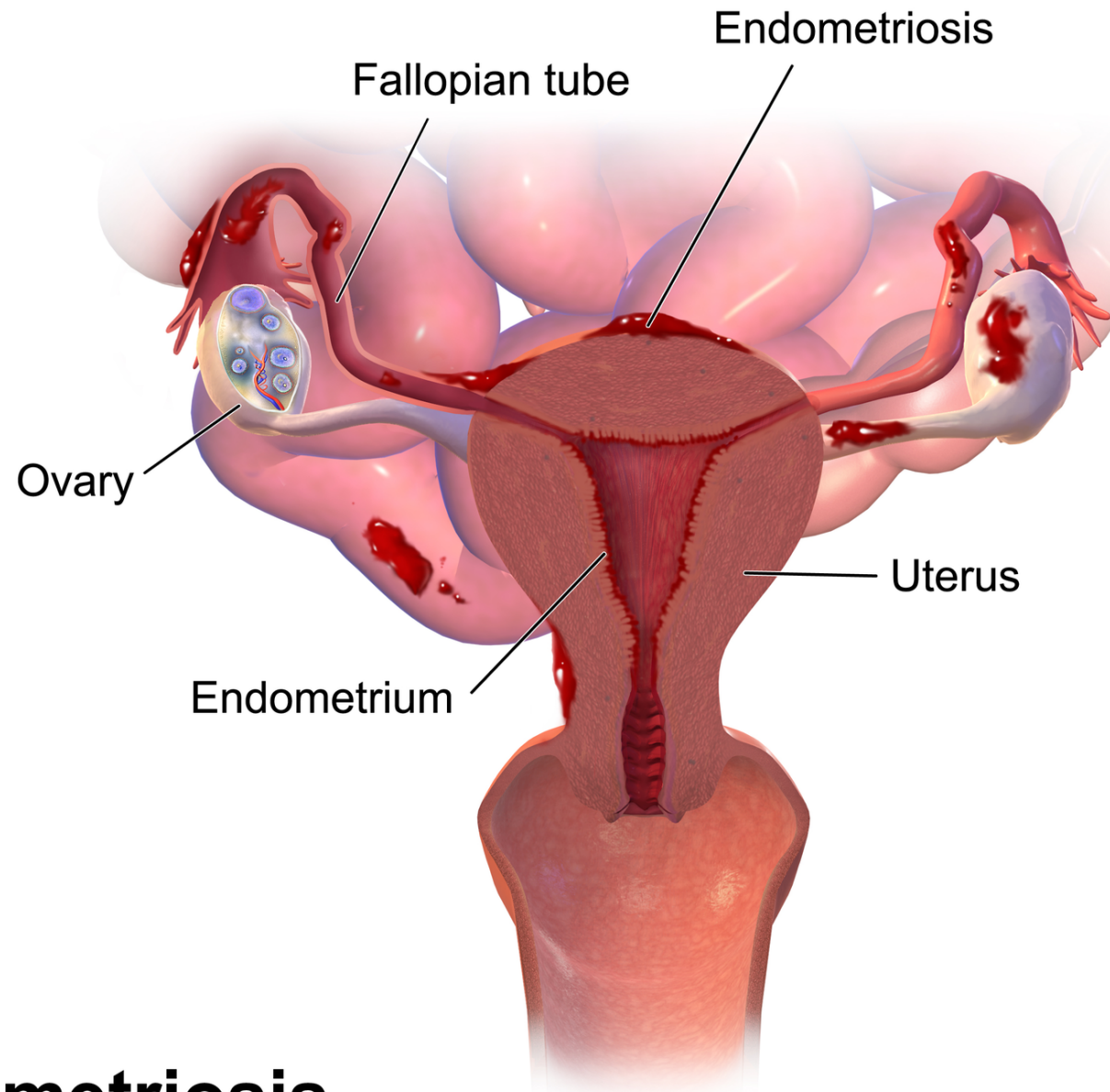
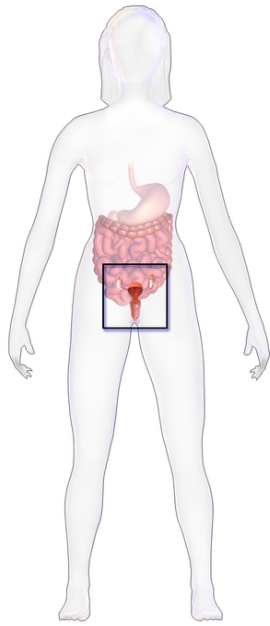


Endometriosis

- Normally, endometrial glands and endometrial stroma are found in the endometrium of the uterus.
- Endometriosis is the presence of ectopic endometrial glands and stroma outside the uterus.
- It is a non-neoplastic condition.

Endometriosis

- Endometriosis is usually found on the peritoneal surfaces of the reproductive organs and adjacent pelvic organs. The most frequent locations are:
 - Ovary (the most common site, around 50%)
 - Pouch of Douglas and uterine ligaments (second most common)
 - Occasionally: cervix, vagina, perineum, bladder, large bowel and umbilicus
 - Rarely: small bowel, kidneys, lungs, nose and brain
- It has been reported in men. The sites involved have been the bladder, scrotum and prostate.



Endometriosis

Endometriosis

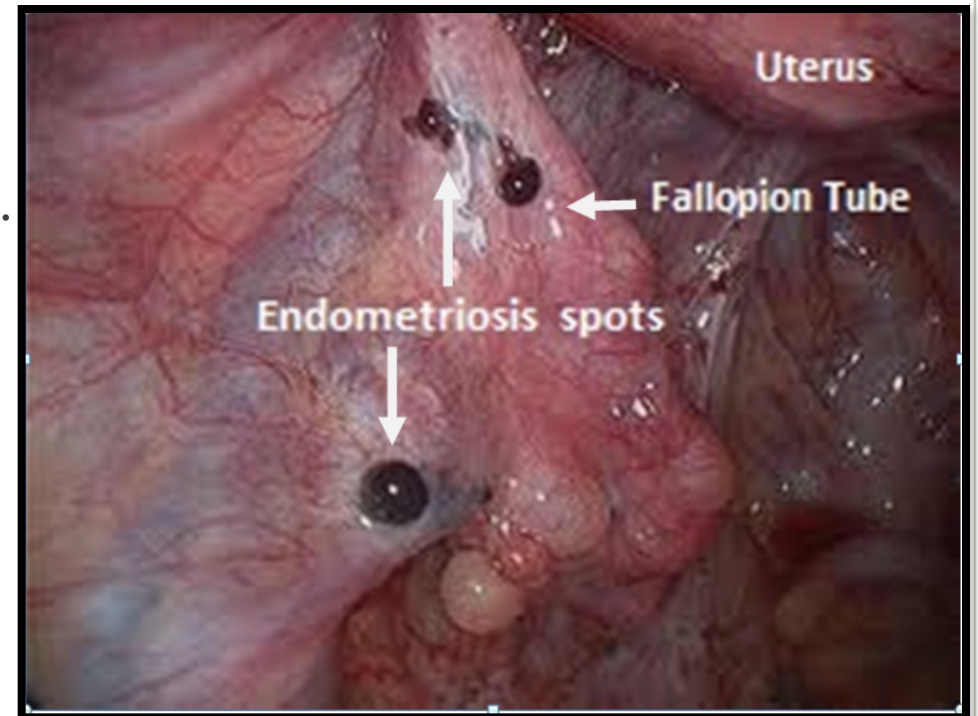
- Like the uterine endometrium it is responsive to the hormonal variations of the menstrual cycle, and bleeds during menstruation.
- Therefore in endometriosis there is menstrual type bleeding at the site of the ectopic endometrium, resulting in blood filled areas (e.g. chocolate cysts).

Clinical Presentation

- The clinical presentation depends on the site of endometriosis:
 - Dysmenorrhea
 - Dyspareunia
 - Cyclic abdominal pain (there is usually a severe menstrual-related pain)
 - **Infertility**
 - **Fibrous adhesions**
- The behavior of endometriosis is benign with no malignant potential. It may recur after surgical excision but the risk is low.

Clinical Presentation

- Endometriosis usually appears as multiple red or brown (due to the hemosiderin) 1 mm to 5 mm nodules (some may form larger masses or cysts).
- Dense fibrous adhesions may surround the foci.



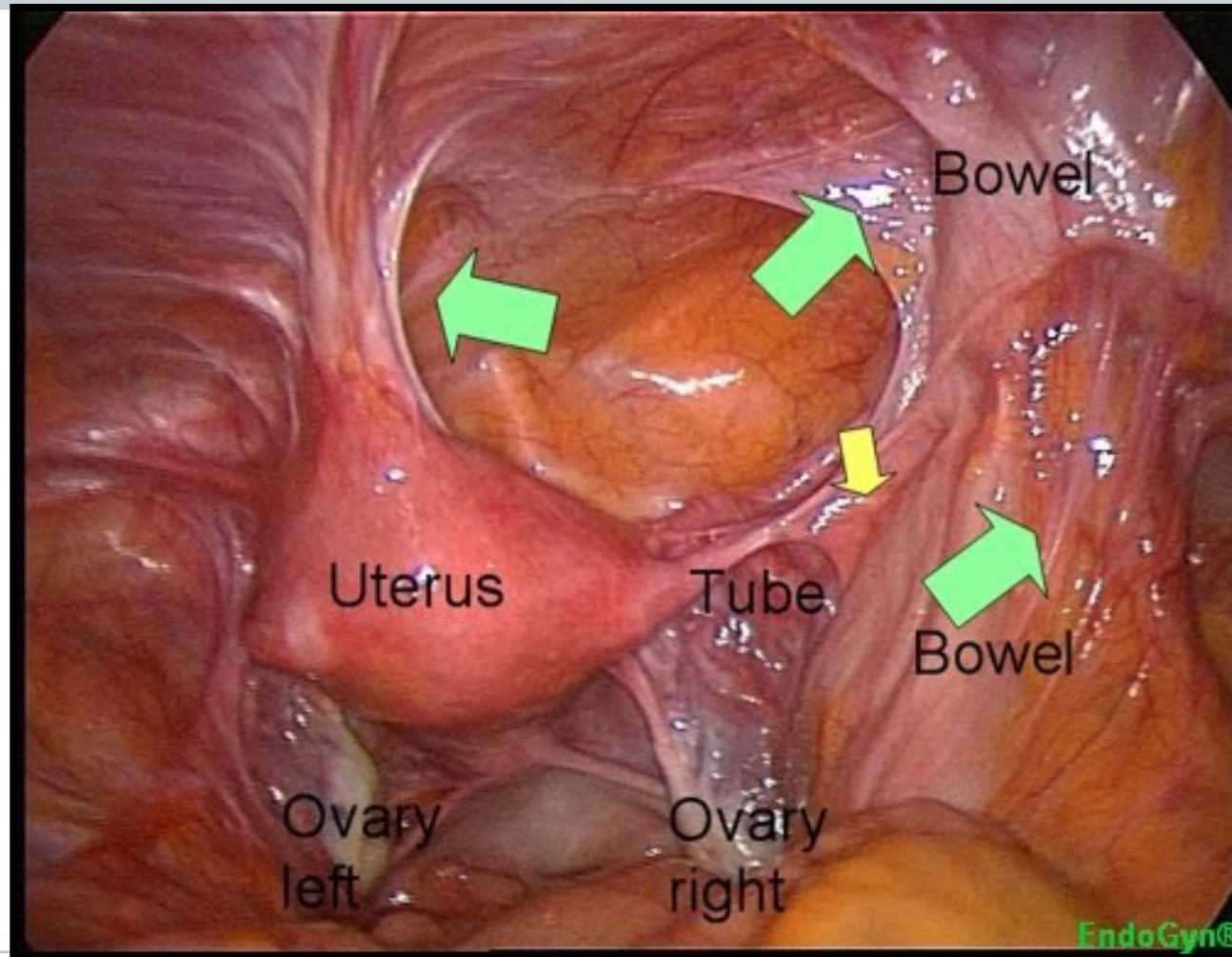
Clinical Presentation

- Repeated hemorrhage into the ovary with each menstrual cycle produces cysts, filled with chocolate-brown material. The cyst is called "chocolate cyst".
- With time the ovaries become totally cystic and turn into large cystic masses filled with chocolate brown fluid.

Chocolate cyst of ovary (endometriotic cyst)



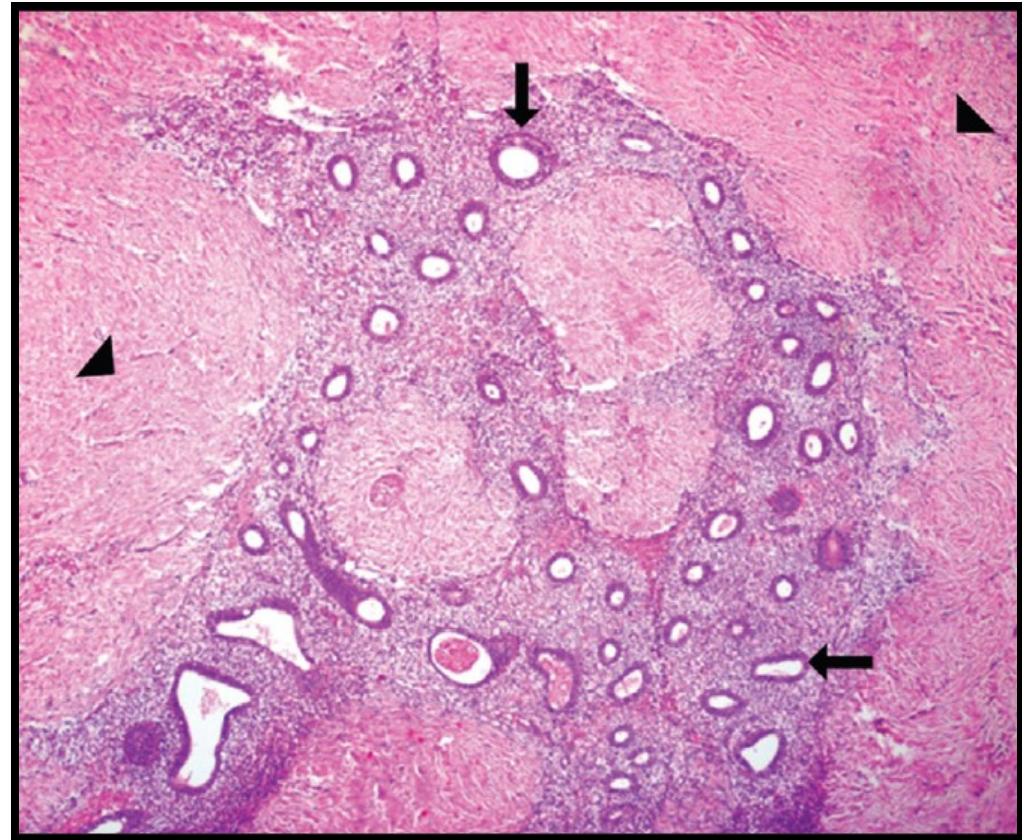
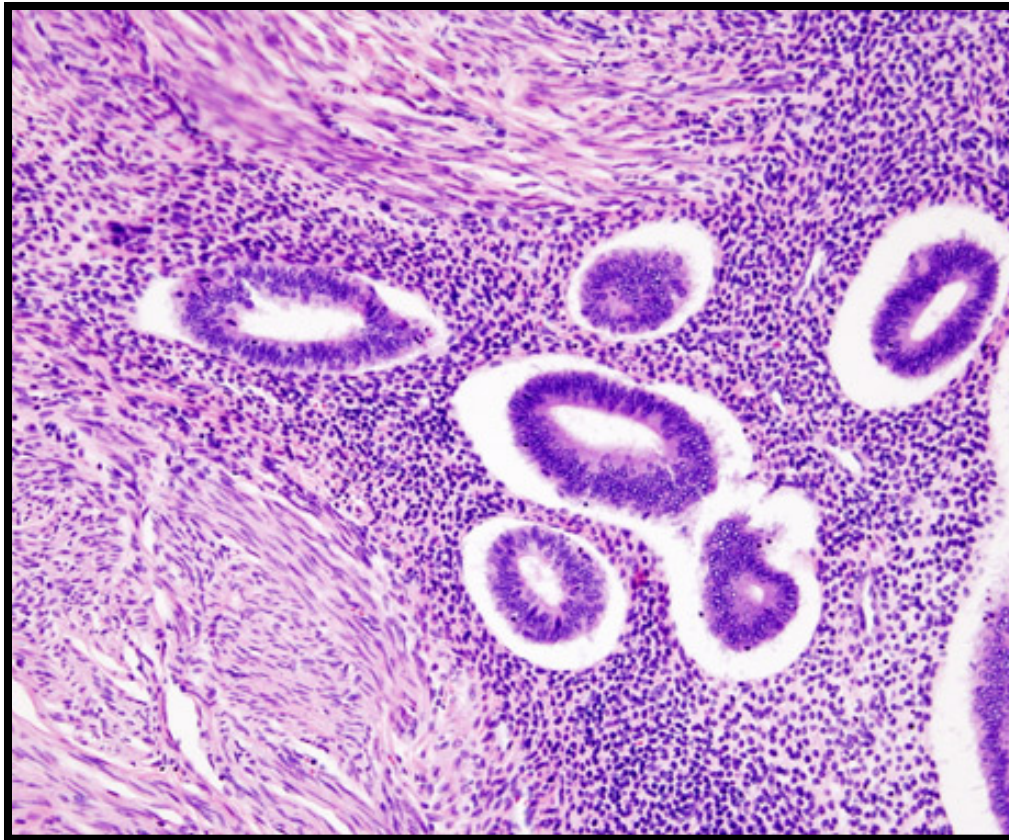
Fibrous adhesions



Microscopic Features

- Ectopic endometrial glands and endometrial stroma are present.
- Denatured blood from previous bleeding is present.
- Macrophages containing hemosiderin (siderophages) are present.
- When endometriosis develops in a muscular organ, the smooth muscle around it becomes hyperplastic.

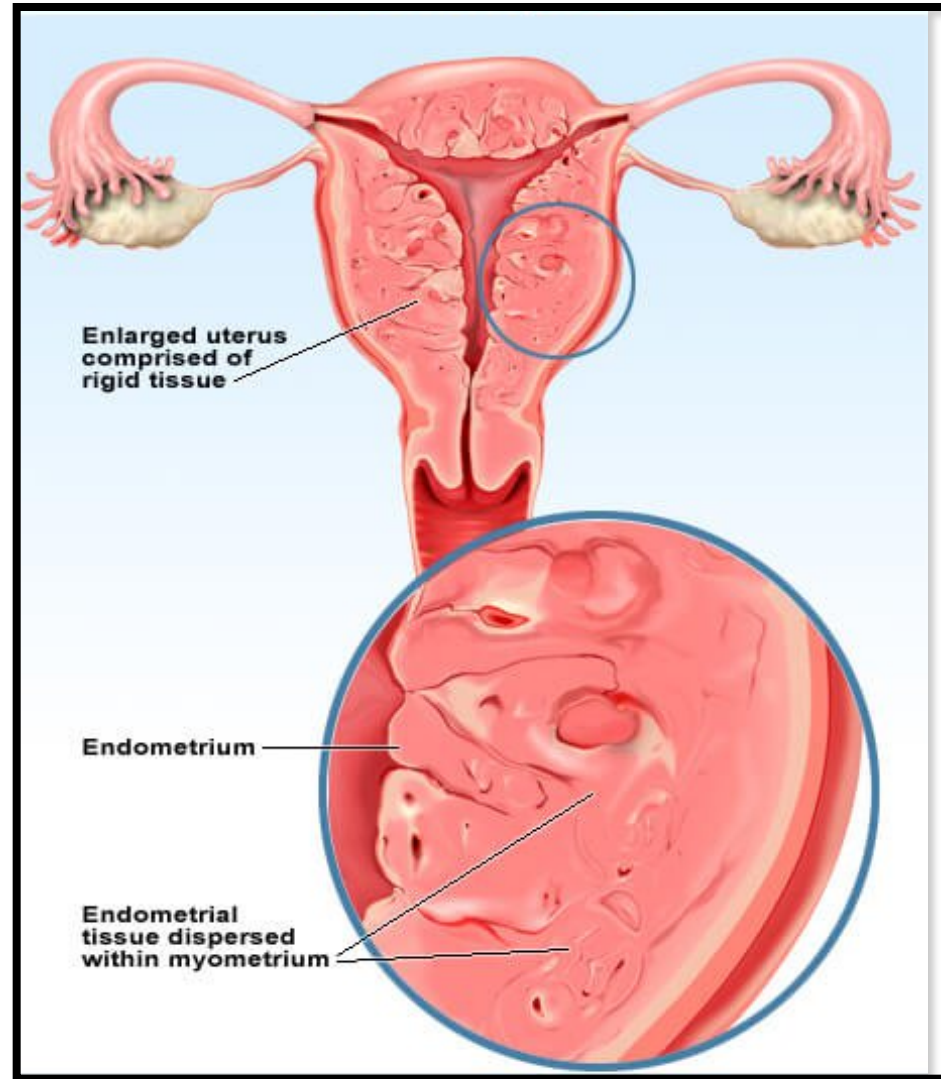
Endometriosis



Adenomyosis

- This is defined as the presence of endometrial glands and endometrial stroma deep in the myometrium of the uterus.
- It is more common in the posterior wall than the anterior wall (but it may affect both walls of the same uterus).
- The disease is primarily a disorder of parous women and is uncommon in the nullipara.

Adenomyosis



Clinical Presentation

- It is associated with menorrhagia and severe dysmenorrhea, however it is asymptomatic in 1/3 of the patients.
- When extensive, the lesions cause myometrial thickening with small yellow or brown cystic spaces containing fluid or blood.
- The behavior of this conditions is benign with no known malignant potential and it usually regresses after the menopause.

Adenomyosis

- Cross section through the wall of a hysterectomy specimen of a 30-year-old woman who reported chronic pelvic pain and abnormal uterine bleeding. The endometrial surface is at the top of the image, and the serosa is at the bottom.



Reference

- Kumar V, Abbas AK, Aster JC. Robbins Basic Pathology. 10th ed. Elsevier; 2018. Philadelphia, PA.

Thank You

End of Lecture