

Polycystic Ovarian Disease and Endometriosis

PATHOLOGY

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REFERENCE: ROBBINS & COTRAN PATHOLOGY AND RUBIN'S PATHOLOGY



Lecture outline: Endometriosis and polycystic ovarian disease.

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

A] Know the clinicopathologic features of endometriosis with special emphasis on: definition, typical sites and theories behind its pathogenesis.

B] Understand the clinical manifestations and pathologic features of polycystic ovarian disease.

Polycystic Ovarian Disease (PCOD)

Polycystic ovaries are characterized by bilateral enlargement of ovaries by multiple small cysts, chronic anovulation and clinical manifestations secondary to excessive production of estrogens and androgens, mainly androgens.

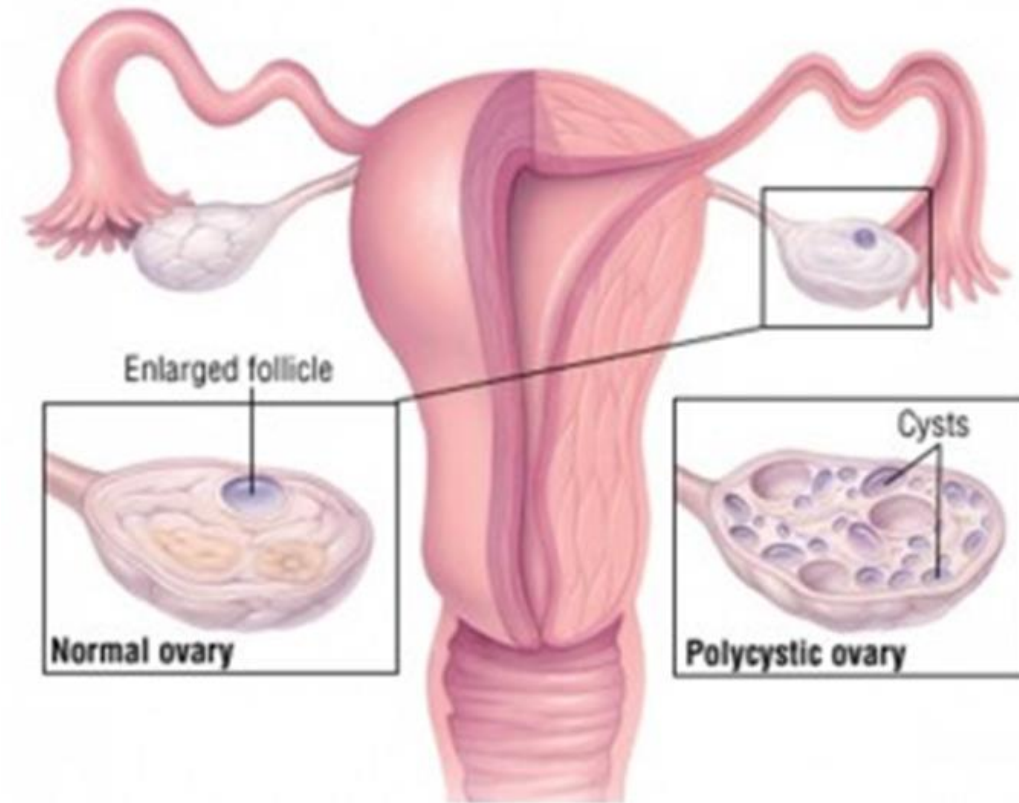
The initial abnormality resulting in the syndrome is not known but is believed to be related to hypothalamus-pituitary dysfunction leading to oversecretion of luteinizing hormone (LH).

LH in turn stimulates the ovary to produce excess androgens. While the secretion of follicle stimulating hormone (FSH) is inhibited → leads to suppression of ovulation and formation of cystic follicles in the ovary.

Patients have:

- high levels of LH,
- low FSH,
- high testosterone and
- high estrogen.

Other names for this syndrome include polycystic ovarian syndrome and **Stein-Leventhal syndrome**



Polycystic Ovarian Disease

Clinical appearances.

Usually young women (between 15 and 30 years), present with:

- secondary amenorrhea with anovulation
- oligomenorrhea or irregular menses
- infertility
- hirsutism
- virilism due to increased androgenic (masculinizing) hormones
- obesity
- acne

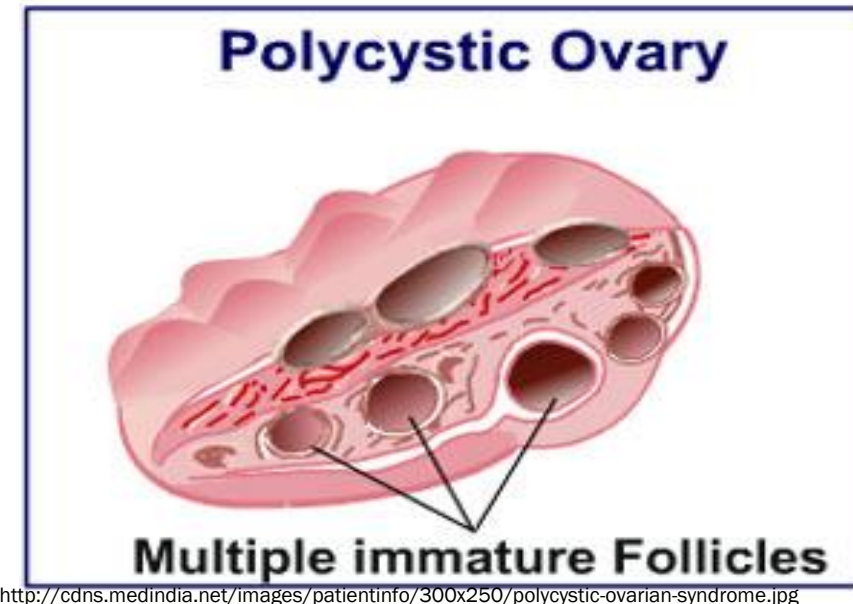
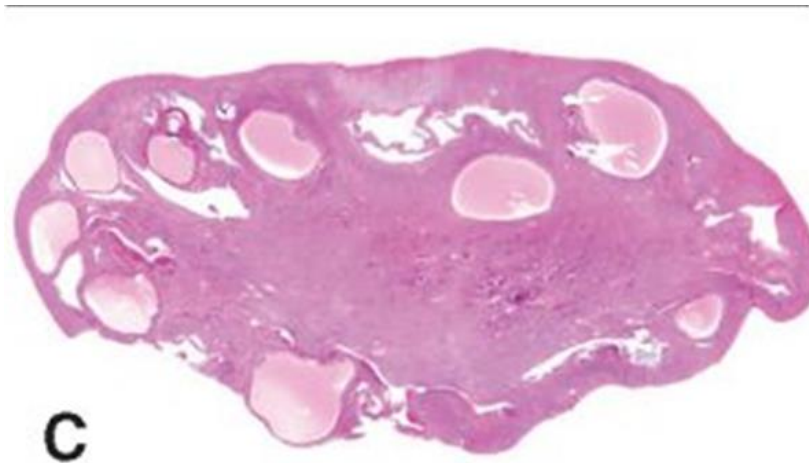


Polycystic ovarian disease.

A: The ovarian surface reveals numerous nodular elevations of clear cysts.

B: Cut section shows several subcortical cystic follicles in the ovary.

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



Picture Taken from Robbins and Cotran Pathologic basis of disease. 8th edition, Chapter 21, 2010 Sanders

Polycystic Ovarian Disease

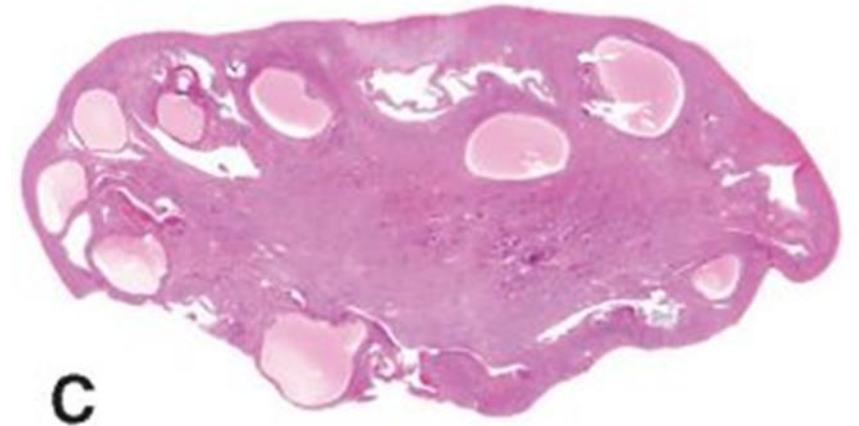
Histology

Ovaries:

- Ovaries are 2 times the normal size with many subcortical cysts measuring 0.5 to 1.5 cm in diameter.
- Microscopically, 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 (because no ovulation, women with PCOD have anovulatory cycles).

Endometrium:

- The chronic anovulation → unopposed estrogen → leads to a hyper estrogenic 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



C

Picture Taken from Robbins and Cotran Pathologic basis of disease. 8th edition, Chapter 21, 2010 Sanders

Polycystic Ovarian Disease

Women with PCOD are at risk for 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, on the back of the neck)

Autoimmune thyroiditis

Treatment

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.



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.

Endometriosis is usually found on the peritoneal surfaces of the reproductive organs and adjacent pelvic organs. The most frequent location is the

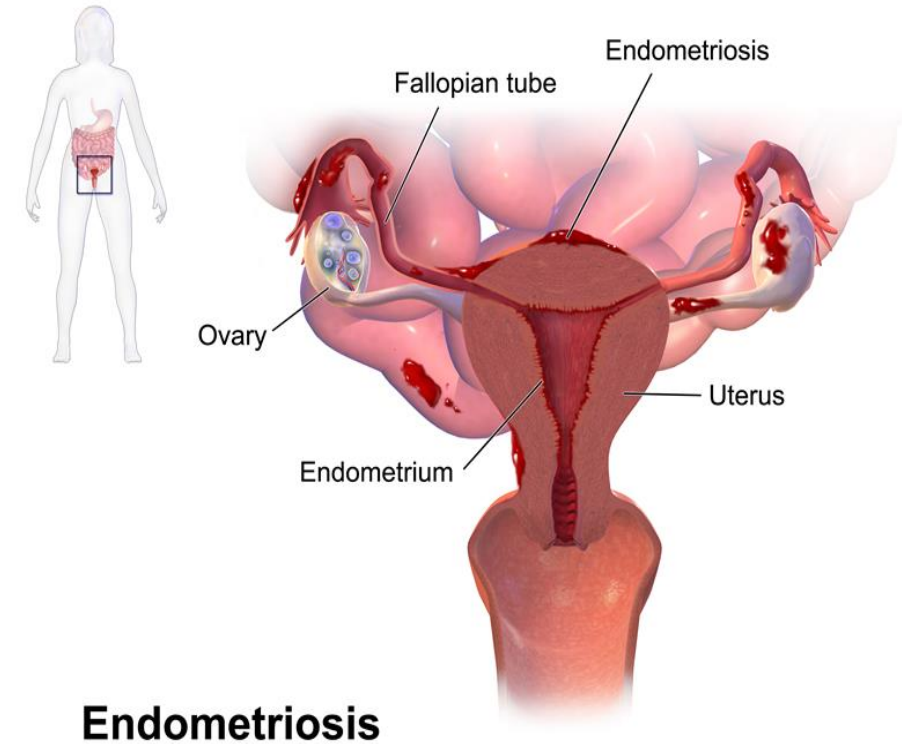
- ovary (approx. 50%)
- followed by the pouch of Douglas and uterine ligaments.
- Occasionally: in cervix, vagina, perineum, bladder, large bowel and umbilicus
- Rarely: in small bowel, kidneys, lungs, nose and brain.

It has been reported in men. The sites involved have been the bladder, scrotum and prostate

It is non-neoplastic.

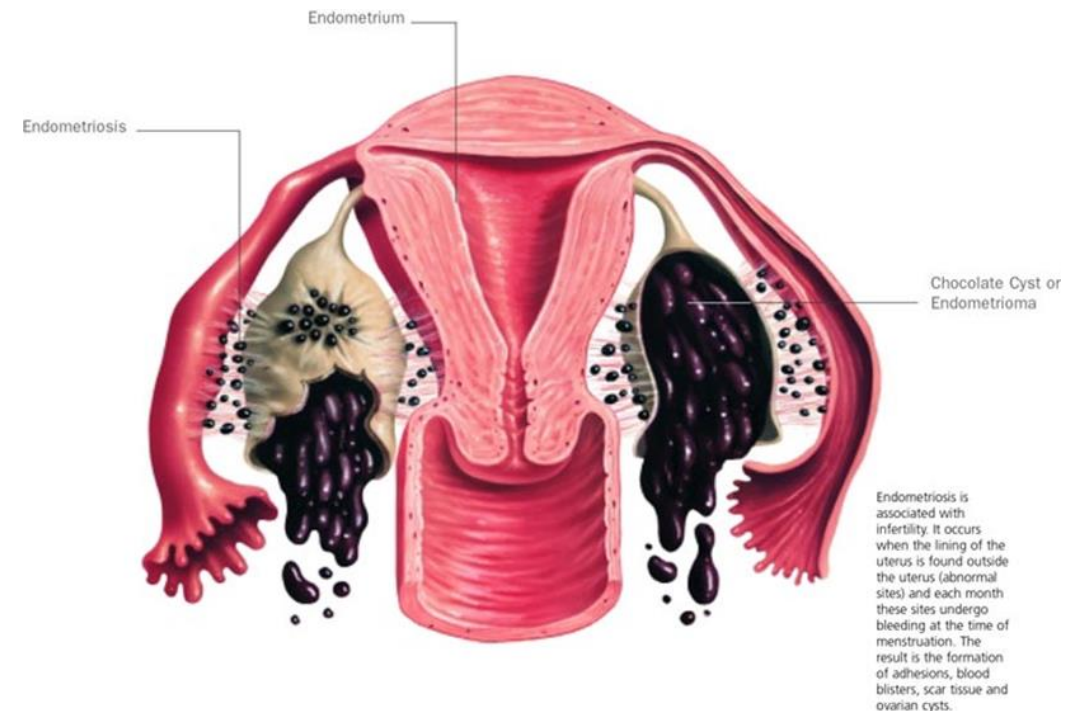
Like the uterine endometrium it is responsive to the hormonal variations of the menstrual cycle, and bleeds during menstruation.

Therefore in endometriosis there is menstrual type bleeding at the site of the ectopic endometrium, resulting in blood filled areas (e.g. chocolate cysts).



Endometriosis :Clinical features

- ▶ Clinical features 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.
- ▶ 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.



<http://www.coastalivf.com.au/images/endometriosis.jpg>

Endometriosis

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.

Clinical behavior

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



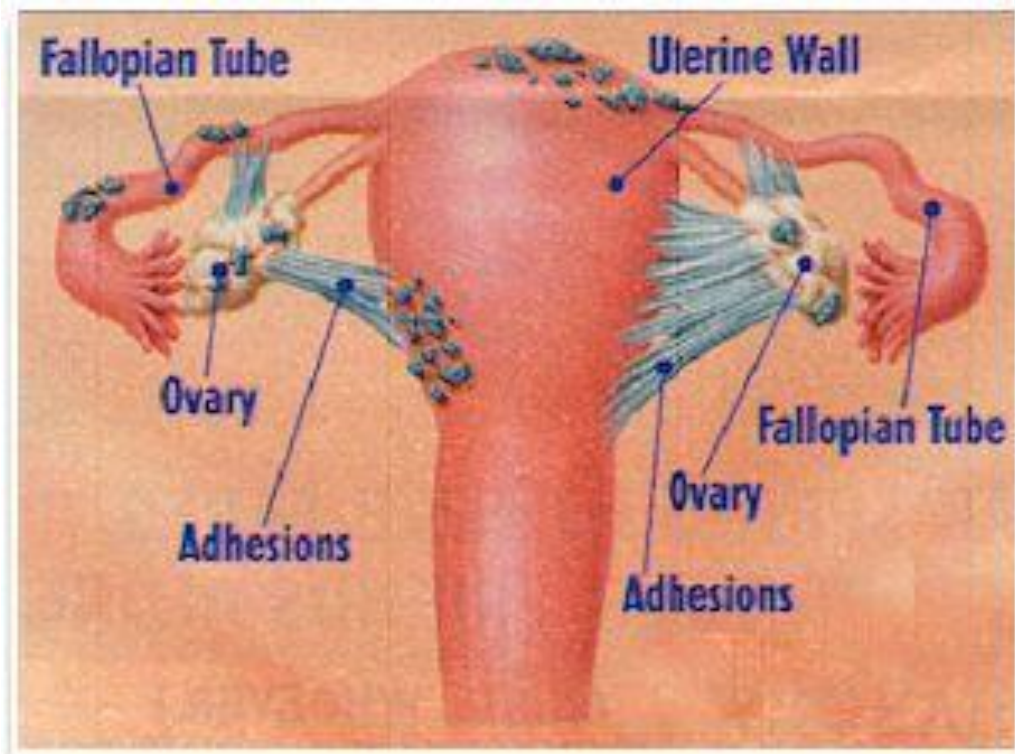
Chocolate cyst of ovary (endometriotic cyst)

http://www.humpath.com/IMG/jpg_ovarian_endometriotic_cyst_07_2a.jpg

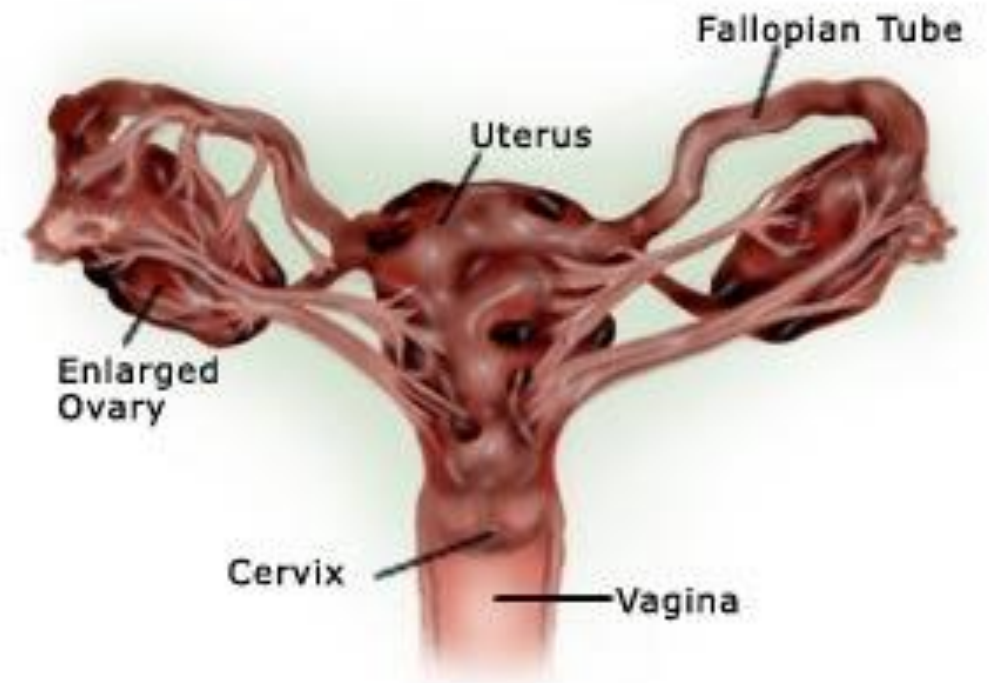
Endometriosis, complications

Infertility

Adhesions



Advanced Endometriosis



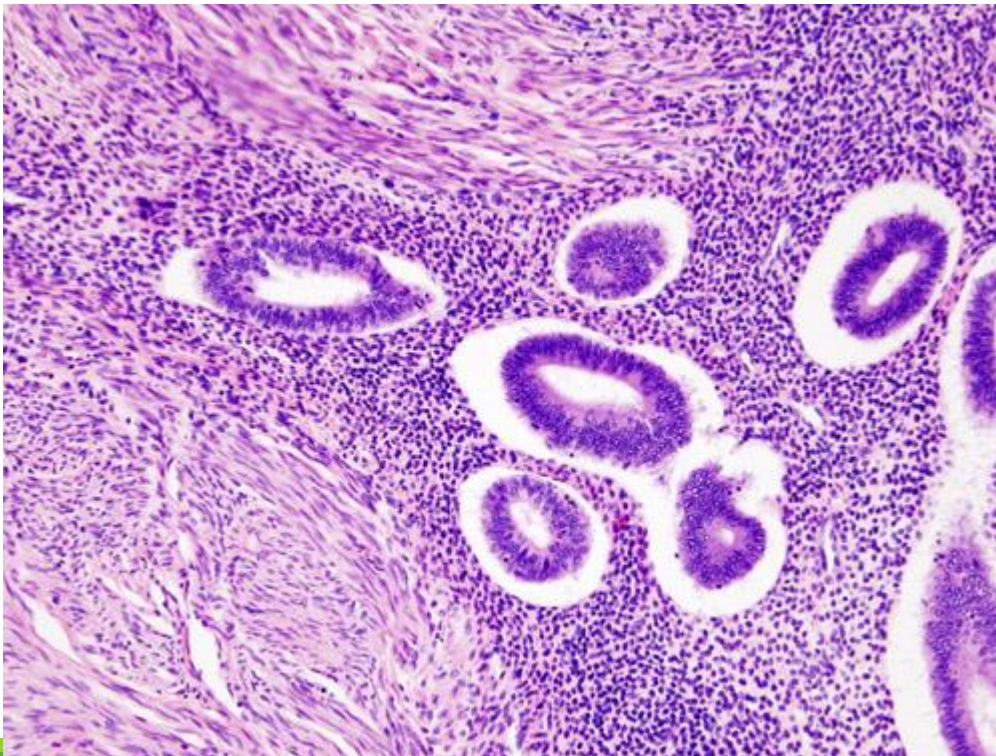
Endometriosis histology

Ectopic endometrial glands and endometrial stroma are present.

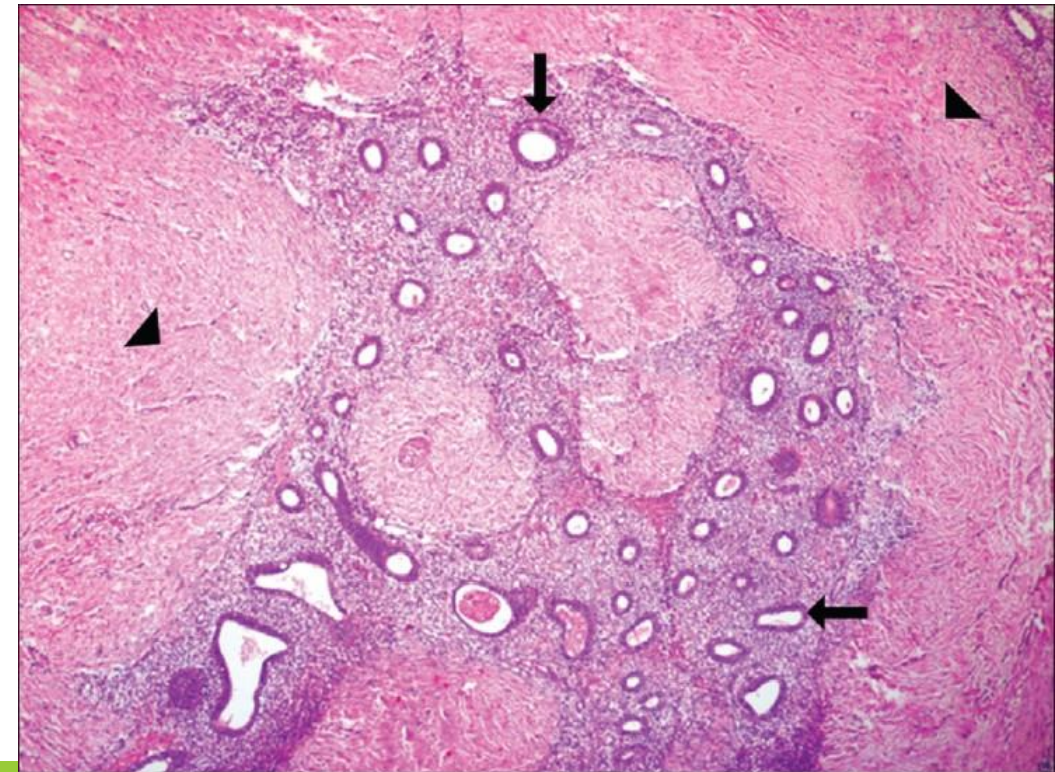
Denatured blood from previous bleeding is present.

Macrophages containing hemosiderin (siderophages) are present.

When endometriosis develops in a muscular organ, the smooth muscle around it is often hyperplastic.



"Uterine adenomyosis (1)". Licensed under CC BY-SA 3.0 via Wikimedia Commons - [http://commons.wikimedia.org/wiki/File:Uterine_adenomyosis_\(1\).JPG#/media/File:Uterine_adenomyosis_\(1\).JPG](http://commons.wikimedia.org/wiki/File:Uterine_adenomyosis_(1).JPG#/media/File:Uterine_adenomyosis_(1).JPG)



Massive abdominal wall endometriosis masquerading as desmoid tumour
Anand Mani, Deshmukh Sanjay D Year : 2011 | Volume: 4 | Issue Number: 2 | Page: 141-14
http://www.jcasonline.com/articles/2011/4/2/images/JCutanAesthetSurg_2011_4_2_141_85043_u4.jpg

Adenomyosis

This is defined as the presence of endometrial glands and endometrial stroma in the myometrium of the uterus.

It is more common in the posterior wall than the anterior wall (but it may affect both walls in the same uterus).

The disease is primarily a disorder of parous women and is uncommon in the nullipara.

It is associated with menorrhagia and severe dysmenorrhea. In 1/3rd of the patients: there are no symptoms.

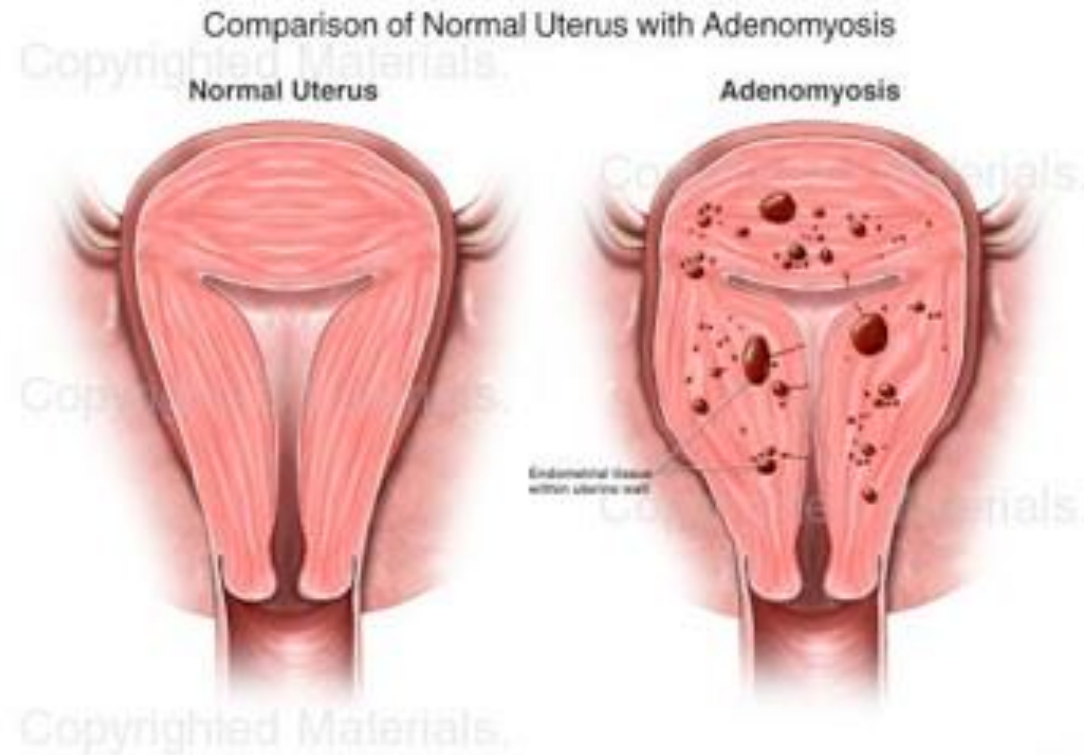
When extensive → the lesions cause → myometrial thickening with small yellow or brown cystic spaces containing fluid or blood.

Clinical behavior.

This is a benign condition with no known malignant potential that 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



<http://www.paroleauxjeunes.fr/wp-content/uploads/2013/11/adenomyose.jpg>



"Adenomyosis, Hysterectomy Specimen" by Ed Uthman, MD - <http://www.flickr.com/photos/euthman/640264025/>. Licensed under CC BY-SA 2.0 via Wikimedia Commons - http://commons.wikimedia.org/wiki/File:Adenomyosis,_Hysterectomy_Specimen.jpg#/media/File:Adenomyosis,_Hysterectomy_Specimen.jpg

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