

Difference Between PCOS and Endometriosis

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Key Difference – PCOS vs Endometriosis

Ovaries play an important role in the reproduction and the maintenance of the female body. They produce the necessary **hormones** and help the maturation of the **egg cells** preserved inside the ovarian cortex. PCOS and endometriosis are two gynecological disorders that affect ovaries and the **fertility** of the affected patient. Polycystic ovarian syndrome is an ovarian disorder characterized by multiple small **cysts** within the ovary and by excess **androgen** production from the ovaries (and to a lesser extent from the adrenals). Presence of endometrial surface **epithelium** and/or the endometrial glands and stroma outside the lining of the uterine cavity is called the endometriosis. **Although PCOS affects only the ovaries, endometriosis can affect any organ of the body depending on the migration of endometrial epithelial cells.** This can be considered as the key difference between PCOS and endometriosis.

What is PCOS?

Polycystic ovarian syndrome (PCOS) is an ovarian disorder characterized by multiple small cysts within the ovary and by excess androgen production from the ovaries (and to a lesser extent from the adrenals). High levels of androgens are present in blood during PCOS due to reduced levels of sex hormone binding globulin. It is thought that there is increased GnRH secretion in PCOS, which causes an increase of LH and androgen secretion.

In PCOS, hyperinsulinemia and **insulin resistance** are frequently observed. Due to this, the prevalence of type 2 diabetes is 10 times higher in women with PCOS than in the normal population. PCOS increases the risk **hyperlipidemia** and cardiovascular diseases by several folds. The mechanism that connects the pathogenesis of polycystic ovaries with anovulation, hyperandrogenism and insulin resistance is still unknown. More often, there is a family history of type 2 diabetes or PCOS that suggests the influence of a genetic component.

Clinical Features

Shortly after menarche, most patients having PCOS experience [amenorrhea/oligomenorrhea](#) and/ or hirsutism and [acne](#).

- Hirsutism – This can be a reason for severe mental distress in young women and can have a negative impact on the social interactions of the patient.
- Age and speed of onset – Hirsutism related to PCOS usually appears around menarche and increases slowly and steadily in the teens and early
- Accompanying virilization
- Menstrual disturbances
- Overweight or obesity

Investigations

- Serum total Testosterone – It is often elevated
- Other androgen levels ex: Androstenedione and Dehydroepiandrosterone sulfate
- 17 alpha – hydroxyprogesterone levels
- Gonadotrophin levels
- Estrogen levels
- Ovarian ultrasound – This may display thickened capsule, multiple 3-5mm cysts, and a hyperechogenic stroma
- Serum prolactin

Dexamethasone suppression tests, CT or MRI of adrenals and selective venous sampling are recommended if an androgen-secreting tumor is suspected clinically or after investigations.

Diagnosis

Before arriving at a definitive diagnosis of PCOS the possibility of other causes such as CAH, [Cushing syndrome](#) and virilizing tumors of the ovary or adrenals should be excluded.

According to Rotterdam Criteria published in 2003, at least two of the three criteria mentioned below should be present to make a diagnosis of PCOS.

- Clinical and/or biochemical evidence of hyperandrogenism
- Oligo-ovulation and/or anovulation
- Polycystic ovaries on ultrasound

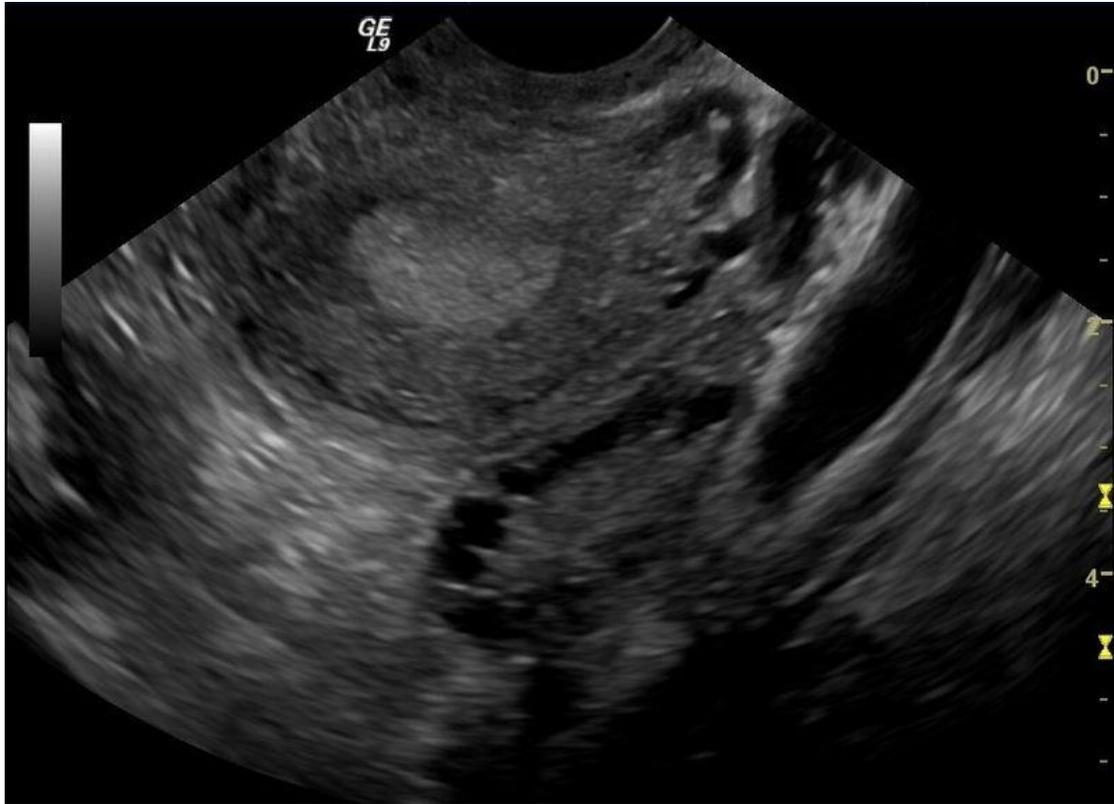


Figure 01: Ultrasound Scan of Polycystic Ovary

Management

Local Therapy for Hirsutism

Depilatory creams, waxing, bleaching, plucking or shaving are usually used in minimizing the amount and the distribution of unwanted hair. Such methods do not worsen or improve the underlying severity of hirsutism. Using a variety of 'laser' hair removal systems and electrolysis are more 'permanent' solutions. These methods are much effective and expensive but still require repeated long-term treatment. Eflornithine cream can inhibit hair growth but is effective in only a minority of cases.

Systemic Therapy for Hirsutism

Long-term treatment is always required as the problem tends to recur when the treatment is discontinued. Following drugs can be used in the systemic treatment of hirsutism.

- Estrogen

- Cyproterone acetate
- Spironolactone
- Finasteride
- Flutamide

Treatment of Menstrual Disturbances

Administration of cyclical estrogen/progestogen will regulate the menstrual cycle and remove the symptoms of oligo- or amenorrhea. Due to the recognized association between PCOS and insulin resistance, Metformin (500mg three times daily) is commonly prescribed to the patients with PCOS.

Treatment for Fertility in PCOS

- Clomifene
- Low-dose FSH

What is Endometriosis?

Presence of endometrial surface epithelium and/or the endometrial glands and stroma outside the lining of the uterine cavity is called the endometriosis. The incidence of this condition is high among women who are between 35-45 years of age. Peritoneum and ovaries are the commonest sites that are affected by endometriosis.

Pathophysiology

The exact mechanism of pathogenesis has not been understood. There are four main widely accepted theories.

- **Menstrual Regurgitation and Implantation**

During menstruation, some viable endometrial glands can move in a retrograde direction instead of moving out through the vaginal tract. These viable glands and tissues get implanted on the peritoneal surface of the endometrial cavity. This theory is strongly supported by the high rate of incidence of endometriosis among women with abnormalities in the genital tract which facilitate the retrograde movement of the menstrual substances.

- **Coelomic Epithelium Transformation**

Most of the cells lining different regions of the female genital tract such as Mullerian ducts, peritoneal surface and ovaries have a common origin. The theory of coelomic epithelium transformation suggests that these cells redifferentiate into their primitive form and then transform into the endometrial cells. These cellular redifferentiations are thought to be triggered by various chemical substances released by the endometrium.

- **Influence of Genetic and Immunological Factors**
- **Vascular and Lymphatic Spread**

The possibility of endometrial cells migrating to distant sites from the endometrial cavity via blood and lymphatic vessels cannot be excluded.

In addition to them, iatrogenic causes such as surgical implantation and digoxin exposure also account for an increasingly high number of endometriosis causes.

Ovarian Endometriosis

Ovarian endometriosis can occur either superficially or internally.

Superficial Lesions

Superficial lesions usually appear as burn marks on the surface of the ovaries. There are numerous hemorrhagic lesions on the surface that give rise to this characteristic appearance. These lesions are commonly associated with the formation of adhesions. Such adhesions formed on the posterior aspect of the ovary results in its fixation to the ovarian fossa.

Endometrioma

Endometriotic cysts or the chocolate cysts of the ovaries are filled with characteristic dark brown colored substances. These cysts originate on the surface of the ovary and gradually invaginate into the cortex. Endometriotic cysts can rupture releasing their contents out, resulting in the formation of adhesions.

Pelvic Endometriosis

Uterosacral ligaments are the most commonly affected structures by this condition. The ligaments can get nodular tender and thicken due to the implantation of the endometrial tissues.

Rectovaginal Septum Endometriosis

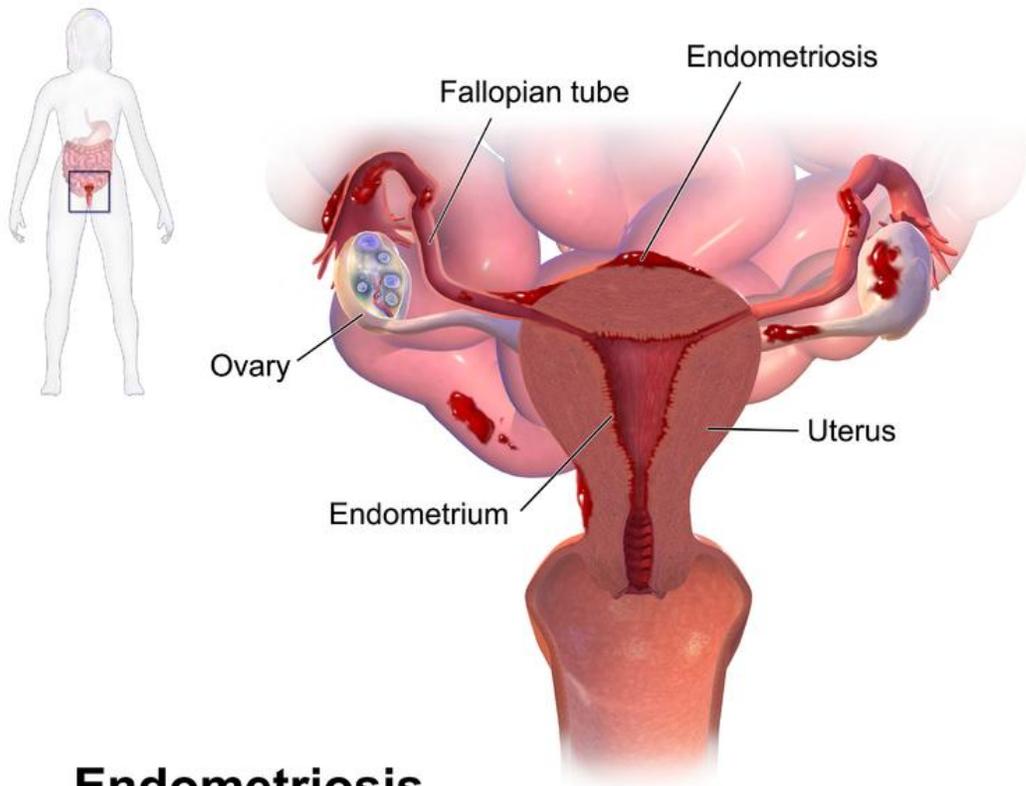
Endometrial lesions in the uterosacral ligaments can infiltrate the rectovaginal septum. After their migration to the rectum, these endometrial tissues form dense adhesions that ultimately result in the complete obliteration of the pouch of Douglas. Dyspareunia and alteration of the bowel habits are the common symptoms of rectovaginal endometriosis.

Peritoneal Endometriosis

This includes the powder burn type lesions appearing on the peritoneum.

Deep Infiltrating Endometriosis

The infiltration of the endometrial glands and stroma more than 5cm below the peritoneal surface is identified as the deep infiltrating endometriosis. This causes a severe pelvic pain and dyspareunia. Painful defecation and dysmenorrhea are the other symptoms of deep infiltrating endometriosis.



Endometriosis

Figure 01: Endometriosis

Symptoms of Endometriosis

- Congestive dysmenorrhea
- Ovulation pain
- Deep dyspareunia
- Chronic pelvic pain
- Lower sacral backache
- Acute abdominal pain
- Subfertility
- Menstrual abnormalities such as oligomenorrhea and menorrhagia

Symptoms of Endometriosis at Distal Sites

- Bowel – per rectal bleeding, cyclical painful defecation, and dyschezia
- Bladder – dysuria, hematuria, frequency, and urgency
- Pulmonary – hemoptysis, hemopneumothorax
- Pleura – pleuritic chest pain, shortness of breath

Diagnosis

Diagnosis is mainly based on classic symptoms.

Investigations

- CA 125 level- is increased in endometriosis
- Anti-endometrial antibodies in serum and peritoneal fluid
- Ultrasonography
- MRI
- Laparoscopy – this is the gold standard test for the diagnosis of endometriosis
- Biopsy

Management

The management of a patient with endometriosis depends on four main factors

- Woman's age
- Her desire for pregnancy
- Severity of the symptoms and the extent of the lesions
- Results of previous therapy

Medical Management

- Analgesics can be given for the pain relief
- Hormonal therapy with contraceptive agents, progesterone, GnRH and etc.
- Surgical Management
- Conservative surgery (i.e.. either laparoscopy or laparotomy)
- Corrective surgical interventions such as adhesiolysis, partial excision of adenomyotic tissues and tubal flushing with oil-soluble media
- Curative surgery

What are the Similarities Between PCOS and Endometriosis?

- Both conditions are gynecological diseases.
- They affect the ovaries either directly or indirectly.
- Subfertility is a common complication of both these conditions.

What is the Difference Between PCOS and Endometriosis?

PCOS vs Endometriosis

Polycystic ovarian syndrome is an ovarian disorder characterized by multiple small cysts within the ovary and by excess androgen production from the ovaries.

Presence of endometrial surface epithelium and/or the endometrial glands and stroma outside the lining of the uterine cavity is called the endometriosis.

Effect on Ovaries

This only affects ovaries.

This can affect many other organs of the body.

Origin of Pathology

Origin of pathology is within the ovaries.

Origin of pathology is outside the ovaries.

Summary – PCOS vs Endometriosis

Polycystic ovarian syndrome is an ovarian disorder characterized by multiple small cysts within the ovary and by excess androgen production from the ovaries. Presence of endometrial surface epithelium and/or the endometrial glands and stroma outside the lining of the uterine cavity is called the endometriosis. Endometriosis can affect many organs of the body including ovaries and other distal sites such as lungs, but PCOS only affects ovaries. This is the main difference between PCOS and endometriosis.

References:

1. Monga, Ash K., and Stephen P. Dobbs. *Gynaecology by ten teachers*. London, Hodder/Arnold, 2011.

Image Courtesy:

1. “Polycystic ovary” By Schomynv – Own work (CC0) via [Commons Wikimedia](#)
2. “Blausen 0349 Endometriosis” – Blausen.com staff (2014). “Medical gallery of Blausen Medical 2014”. *WikiJournal of Medicine* 1 (2). DOI:10.15347/wjm/2014.010. ISSN 2002-4436. – Own work ([CC BY 3.0](#)) via [Commons Wikimedia](#)

How to Cite this Article?

APA: Difference Between PCOS and Endometriosis. (2017, September 26). Retrieved (date), from <http://differencebetween.com/difference-between-pcos-and-vs-endometriosis/>

MLA: " Difference Between PCOS and Endometriosis " *Difference Between.Com.* 26 September 2017. Web.

Chicago: “Difference Between PCOS and Endometriosis.” *Difference Between.Com.* <http://differencebetween.com/difference-between-pcos-and-vs-endometriosis/> accessed (accessed [date]).



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