ADENOMYOSIS

*Endometriosis Interna, Stromal Endometriosis*

Medical condition characterized by the presence of ectopic endometrial tissue within the myometrium.

**Diagnosis**

♀ Female

**Related Diagnoses:**

- Obesity
- Menstrual cycle disorders
- Endometriosis
- Endometrial cancer
- Uterine fibroids
- Hysterectomy

**About Adenomyosis**

Adenomyosis is a benign condition of the uterus, defined by the presence of endometrial glands and stroma within the myometrium. It is known as a histological diagnosis but it has a clinical dignity showing symptoms (dysmenorrhea, dyspareunia, abnormal uterine bleeding, and infertility) and sharing some pathogenic mechanisms with endometriosis.

Adenomyosis has been defined as the “benign invasion of endometrium into the myometrium, producing a diffusely enlarged uterus which microscopically exhibits ectopic nonneoplastic endometrial glands and stroma surrounded by a hypertrophic (increase in the volume of an organ or tissue due to the enlargement of its component cells) and hyperplastic (increase in the amount of organic tissue that results from cell proliferation) myometrium”. Two separate pathogenetic theories have been advanced to explain its formation: (1) an origin from the invagination of the deepest portion of the endometrial mucosa between bundles of smooth muscle fibres of the myometrium, or along the intramyometrial lymphatic system; (2) a metaplastic process initiating from ectopic intramyometrial endometrial tissue produced de novo.

The condition is typically found in women between the ages of 35 and 50. However, because the endometrial glands can be trapped in the myometrium, it is possible to have increased pain without increased blood (This can be used to distinguish adenomyosis from endometrial hyperplasia; in the latter condition, increased bleeding is more common.).

In adenomyosis, basal endometrium penetrates into hyperplastic myometrial fibers. Therefore, unlike functional layer, basal layer does not undergo typical cyclic changes with menstrual cycle.

Adenomyosis may involve the uterus focally, creating an adenomyoma. With diffuse
involvement, the uterus becomes bulky and heavier. Adenomyosis is associated with an increased incidence of preterm labour and premature rupture of membranes. Women with adenomyosis are at an increased risk of anemia. This can cause fatigue, dizziness, and moodiness. Adenomyosis has also been linked with anxiety, depression, and irritability.

It is advocated that adenomyosis poses no increased risk for cancer development. However, both entities could coexist and the endometrial tissue within the myometrium could harbor endometrial adenocarcinoma, with potentially deep myometrial invasion. As the condition is estrogen-dependent, menopause presents a natural cure. Patients with adenomyosis often also have leiomyomata and/or endometriosis.

**Associated diseases**

- preterm labour
- premature rupture of membranes
- anemia
- fatigue
- dizziness
- dizziness
- anxiety
- depression
- irritability

**Complications**

- anemia
- painful periods

**Risk factors**

- multiparity
- previous abortion
- dilatation and currrattage
- chronic smoker and women having irregular cycles

**Impact on fertility**

Classically, the diagnosis of adenomyosis has only been possible on a hysterectomy specimen, usually in women in their late fourth and fifth decades, and, therefore, evaluating any relationship with infertility was simply not possible. As a consequence, to this day, no epidemiologic data exists linking adenomyosis to a state of subfertility. Today, new imaging techniques have enabled a noninvasive diagnosis at a much earlier time and a number of single-case or small series reports have appeared showing that medical, surgical, or combined treatment can restore fertility in women with adenomyosis, an indirect proof of an association. At the functional level, several anomalies found in the so-called junctional zone, or inner myometrium, in adenomyosis patients have been shown to be associated with poor reproductive performance, mainly through perturbed uterine peristalsis. Additional evidence for an association comes from experimental data: in baboons, adenomyosis is associated with lifelong primary infertility, as well as to endometriosis. Finally, indirect proof comes from studies of the eutopic and ectopic endometrium in women with adenomyosis proving the existence of an altered endometrial function and receptivity. In conclusion, sufficient indirect proof exists linking adenomyosis to infertility to warrant systematic clinical studies.
**Prevention**

There is no prevention for this condition.

**Symptoms**

- intensified debilitating pain all the time and/or
- acute and increasing pain at menstruation and ovulation
- strong 'contraction' feel of uterus: abdominal cramps
- a 'bearing' down feeling: pressure on bladder
- dragging sensation down thighs and legs
- heavy bleeding and flooding: large blood clots
- prolonged bleeding i.e; up to 8–14 days

**Therapies**

**Self therapy**

**Traditional Chinese medicine**

Shaoyao-Gancao Decoction (SGD, Shakuyaku-Kanzo-to in Japanese), a well-known traditional Chinese medicine prescription, was sourced from the Chinese Medical Classics text—Shanghan lun in 210 CE. The herbal prescription, which is made up of two herbs (Paeoniae Radix and Glycyrrhizae Radix, “Shaoyao” and “Gancao” in Chinese, resp.), is commonly used in the treatment of gynecological disorders in China, including dysmenorrhea, menorrhagia, and infertility. Clinically, SGD has been used very efficaciously and widely to treat adenomyosis in women in traditional Chinese medical practice, since it has the advantage of noninvasive and less/no side effects. Similar herbal prescription has also been used in Japan and other Oriental countries. In addition, modern pharmacological studies have demonstrated that SGD possesses analgesic and anti-inflammatory effects. Moreover, SGD treatment resulted in a significantly low incidence of adenomyosis in an experimental animal model. However, little is known about the potential mechanisms of the antiadenomyosis effect of SGD.

**Conventional medicine**

**Pharmacotherapy**

In those patients who are averse to surgery or those who wish to preserve their reproductive potential, newer, conservative medical and minor surgical procedures are increasingly being used in the treatment of adenomyosis.

Conservative treatment often consists of anti-inflammatory medications, such as ibuprofen or other NSAIDs (nonsteroidal anti-inflammatory drugs). Hormonal
Manipulation may include combined or progestin-only oral contraceptives as well as other options such as transdermal patches and progesterone-releasing intrauterine devices. Norethindroneacetate (NA) is the acetic acid ester of norethindrone (a synthetic progestin) and is about twice as potent as norethindrone. NA has been reported to be effective in the treatment of endometriosis. In lieu of this information and considering the pharmacological profile of NA, it may be presumed to be suitable for the management of adenomyosis. Thus, NA in the medical management of adenomyosis is a novel therapy. However, significant breakthrough bleeding is reported in patients of endometriosis being treated continuously with NA. Due to differences in symptomatology and gland invasion of the two conditions, breakthrough bleeding may be deemed avoidable in the treatment of adenomyosis.

Long term treatments are medications commonly used as oral contraceptives. Hormonal suppression may be used in the form of danazol or a gonadotropin-releasing hormone agonist. These medications simulate menopause, a period in which adenomyosis often resolves naturally.

**Surgical therapy**

Surgical options may include endometrial ablation. Ultrasound (US) -guided percutaneous microwave ablation (PMWA) has been used in the treatment of symptomatic adenomyosis and fibroids. Before ablation, all of the patients underwent examinations, including routine blood and serum gonadal hormone. In addition, uterine volume was recorded. The mean uterine diameter and volume were calculated. Ablation was performed under intravenous conscious sedation. Percutaneous approaches are associated with a risk of bowel puncture; therefore, the intestinal tract must be carefully pushed off from the abdominal wall.

Other options are laparoscopic myometrial electrocoagulation and adenomyoma excision. These have demonstrated positive results in several studies, though long-term data is lacking. A non-surgical procedure, uterine artery embolization may also be used to block the blood supply to the ectopic endometrium, selectively killing the problematic tissue. High frequency ultrasound surgical ablation is also being explored as a treatment for both focal and diffuse forms of adenomyosis over complete hysterectomy. Hysterectomy may be warranted in some cases where fertility is not desired, and all other treatments have failed.

**Assisted reproduction**

Adenomyosis usually alters the transit of eggs and sperm and the embryo implantation process, in vitro fertilization enables egg to be fertilized in a laboratory, and then to be insert to uterus. It has greater probabilities of implantation.

Adenomyosis does not have affect on in vitro fertilization and the normal progress of the pregnancy, but in some cases, woman must undergo agonist gonadotropin-releasing hormone treatment. This provokes a temporary condition similar to menopause when ovarian function it stopped and adenomyosis tissue is reduced.
Find more about related issues

Diagnoses

Obesity
A disease of excess body fat that can have a negative effect on health, leading to reduced life expectancy and other health problems.
Learn more at: www.fertilitypedia.org/therapy/diag/obesity

Menstrual cycle disorders
An abnormal condition in a woman’s menstrual cycle.
Learn more at: www.fertilitypedia.org/therapy/diag/menstrual-cycle-disorders

Endometriosis
A state in which pieces of the tissue alike to the lining of the uterus (endometrium) grow in other parts of the body.
Learn more at: www.fertilitypedia.org/therapy/diag/endometriosis

Endometrial cancer
Cancer that arises from the endometrium, the lining of the uterus.
Learn more at: www.fertilitypedia.org/therapy/diag/endometrial-cancer

Uterine fibroids
The most common benign smooth muscle tumors of the uterus encountered in women of reproductive age.
Learn more at: www.fertilitypedia.org/therapy/diag/uterine-fibroids

Hysterectomy
A surgery performed to remove a woman’s uterus.
Learn more at: www.fertilitypedia.org/therapy/diag/hysterectomy

Organs

Endometrial glands
Tube-like uterine glands, which are found in the functional layer of the uterine called endometrium.
Learn more at: www.fertilitypedia.org/edu/organs/endometrial-glands

Myometrium
The middle layer of the uterine wall, consisting of uterine smooth muscle cells.
Learn more at: www.fertilitypedia.org/edu/organs/myometrium

Uterus
The uterus is the largest and major organ of the female reproductive tract that is the site of fetal growth and is hormonally responsive.
Learn more at: www.fertilitypedia.org/edu/organs/uterus

Reproductive cells
Endometrial cell
Cells composing an inner layer of the uterine lining.
Learn more at: www.fertilitypedia.org/edu/reproductive-cells/endometrial-cell

Reproductive functions

Endometrial receptivity
Period when the womb is receptive for implantation of the free-lying blastocyst.
Learn more at: www.fertilitypedia.org/edu/reproductive-functions/endometrial-receptivity

Fertilization
The fusion of an ovum with a sperm to initiate the development of a new individual organism.
Learn more at: www.fertilitypedia.org/edu/reproductive-functions/fertilization

Fetal development
The process in which a human embryo or fetus gestates during pregnancy, from fertilization until birth.
Learn more at: www.fertilitypedia.org/edu/reproductive-functions/fetal-development

Implantation
The very early stage of pregnancy at which the embryo adheres to the wall of the uterus.
Learn more at: www.fertilitypedia.org/edu/reproductive-functions/implantation

Risk factors

Abortion
The ending of pregnancy by removing a fetus or embryo before it can survive outside the uterus.
Learn more at: www.fertilitypedia.org/therapy/rf/abortion

Anemia
A decrease in the amount of red blood cells or hemoglobin in the blood.
Learn more at: www.fertilitypedia.org/therapy/rf/anemia

Depression and anxiety disorders
Disorder characterized by symptoms of both anxiety and depression that may cause sexual disorders and anovulation.
Learn more at: www.fertilitypedia.org/therapy/rf/depression-and-anxiety-disorders

Dilatation and currrattage
A procedure to remove tissue from inside the uterus.
Learn more at: www.fertilitypedia.org/therapy/rf/dilatation-and-currrattage

Irregular menstrual cycles
An abnormal variation in length of menstrual cycles.
Learn more at: www.fertilitypedia.org/therapy/rf/irregular-menstrual-cycles
Multiparity
The number of live births plus stillbirths with gestational age of ≥20 weeks.
Learn more at: www.fertilitypedia.org/therapy/rf/multiparity

Preterm birth
Birth of the baby before 37 completed weeks of gestational age.
Learn more at: www.fertilitypedia.org/therapy/rf/preterm-birth

Smoking
Long-lasting inhalation of the smoke of burning tobacco.
Learn more at: www.fertilitypedia.org/therapy/rf/smoking-1

Uterine fibroids
Benign smooth muscle neoplasm that very rarely becomes cancer.
Learn more at: www.fertilitypedia.org/therapy/rf/uterine-fibroids

Symptoms

Anemia
A decrease in number of red blood cells or less than the normal quantity of hemoglobin in the blood resulting in low oxygen levels in body tissues.
Learn more at: www.fertilitypedia.org/edu/symptoms/anemia

Anxiety
The emotional state characterized by unpleasant feelings such as uneasiness, worry, apprehension and dread.
Learn more at: www.fertilitypedia.org/edu/symptoms/anxiety

Avoidance of sex
A medical condition whose main symptom is low sexual desire.
Learn more at: www.fertilitypedia.org/edu/symptoms/avoidance-of-sex

Depression
The emotional state characterized by persistent feel of low self-esteem, loss of interest, sadness and negative attitude.
Learn more at: www.fertilitypedia.org/edu/symptoms/depression

Fatigue
A subjective feeling of tiredness which is distinct from weakness, which has a gradual onset.
Learn more at: www.fertilitypedia.org/edu/symptoms/fatigue

Infertility
The failure to achieve a clinical pregnancy after 12 months or more of regular unprotected sexual intercourse.
Learn more at: www.fertilitypedia.org/edu/symptoms/infertility
**Irritability**
A cognitive effect which results in one experiencing heightened feelings of annoyance, stress, irritability and a tendency towards violent behaviour.
Learn more at: www.fertilitypedia.org/edu/symptoms/irritability

**Lower abdominal pain**
Pain that occurs in low area of abdomen, below the umbilicus.
Learn more at: www.fertilitypedia.org/edu/symptoms/lower-abdominal-pain

**Painful sexual intercourse**
The painful feelings during sexual intercourse.
Learn more at: www.fertilitypedia.org/edu/symptoms/painful-sexual-intercourse

**Preterm birth**
A birth of the baby before 37 completed weeks of gestational age.
Learn more at: www.fertilitypedia.org/edu/symptoms/preterm-birth

**Therapies**

- **Anti-inflammatory medications**
  Medications that reduce inflammation.
  Learn more at: www.fertilitypedia.org/edu/therapies/anti-inflammatory-medications

- **Egg donation**
  Process by which a woman donates eggs for purposes of assisted reproduction or biomedical research.
  Learn more at: www.fertilitypedia.org/edu/therapies/egg-donation

- **Endometrial ablation**
  An outpatient medical procedure that is used to remove or destroy the endometrial lining of the uterus in women.
  Learn more at: www.fertilitypedia.org/edu/therapies/endometrial-ablation

- **ICSI**
  A micromanipulative fertilization technique in which a single sperm is injected directly into an egg.
  Learn more at: www.fertilitypedia.org/edu/therapies/icsi

- **Laparoscopic myometrial electrocoagulation and ade**
  A laparoscopic surgery which is done as a procedure to treat adenomyosis.
  Learn more at: www.fertilitypedia.org/edu/therapies/laparoscopic-myometrial-electrocoagulation-and-adenomyoma-excision

- **Norethindroneacetate pharmacotherapy**
  A synthetic progestin which has been reported to be effective in the treatment of gynecological disorders and as a hormonal contraception.
  Learn more at: www.fertilitypedia.org/edu/therapies/norethindroneacetate-pharmacotherapy
**Sperm donation**
The procedure in which a man (sperm donor) provides his sperm for fertility treatment.
Learn more at: [www.fertilitypedia.org/edu/therapies/sperm-donation](http://www.fertilitypedia.org/edu/therapies/sperm-donation)

**Standard IVF**
A process in which an egg is fertilised by sperm outside the body: in vitro. Own or donated gametes may be used.
Learn more at: [www.fertilitypedia.org/edu/therapies/standard-ivf](http://www.fertilitypedia.org/edu/therapies/standard-ivf)

**Traditional Chinese medicine**
A broad range of medicine practices sharing common concepts which have been developed in China and are based on a tradition of more than 2000 years.
Learn more at: [www.fertilitypedia.org/edu/therapies/traditional-chinese-medicine](http://www.fertilitypedia.org/edu/therapies/traditional-chinese-medicine)

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### Gallery

**Adenomyosis-hysterectomy**
*Cross section through the wall of a hysterectomy specimen of a 30-year-old woman who reported chronic pelvic pain and abnormal uterine bleeding.*
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**Adenomyosis-histopathology**
*Histopathological image of uterine adenomyosis observed in hysterectomy specimen. Hematoxylin & eosin stain.*

**Adenomyosis-hysterectomy2**
*Uterus with homogeneously thickened myometrium, with trabeculated tan surface with several widely distributed, small cystic-like spaces.*
“How to Evaluate Adenomyosis in Patients Affected by Endometriosis? [http://www.hindawi.com/journals/mis/2014/507230/]” —by Donato and Seracchioli licensed under CC BY 3.0

“Infertility and Adenomyosis [http://www.hindawi.com/journals/ogi/2012/786132/]” —by Campo et al. licensed under CC BY 3.0


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“Ultrasound-guided percutaneous microwave ablation for adenomyosis: efficacy of treatment and effect on ovarian function [http://www.nature.com/articles/srep10034]” —by Yang et al. licensed under CC BY 4.0

“Potential Mechanisms of an Antiadenomyosis Chinese Herbal Formula Shaoyao-Gancao Decoction in Primary Cell Culture Model [http://www.hindawi.com/journals/ecam/2014/982913/]” —by Guan et al. licensed under CC BY 3.0


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