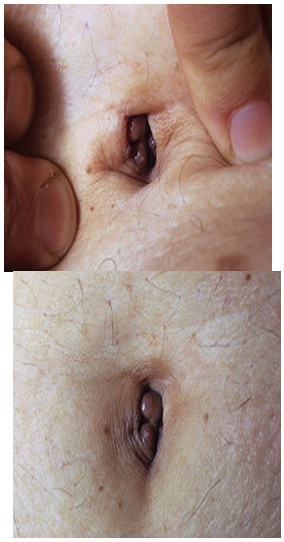

Endometriosis

Endometriosis is a common disorder of the female reproductive organs and is the leading cause of chronic pelvic pain in women.

- In women who have endometriosis, tissue similar to the lining of the uterus (endometrium) develops in other areas of the body, most commonly within the pelvic area or the abdominal cavity. The endometrial tissue may attach itself to the ovaries, the outside of the uterus, the intestines, or other abdominal organs. Rarely, endometriosis occurs outside the abdominal cavity, such as in the brain or lungs. Endometriosis may also develop in surgical scars following surgery on pelvic organs. The term "implant" is used to refer to a specific area of endometriosis in a certain tissue.

- It is estimated that over 5.5 million American women will experience problems with endometriosis, but an exact determination of the number of women affected is difficult, since many women may have the condition and do not have symptoms. In other situations, women may also have symptoms that could be attributed to endometriosis, but never undergo formal diagnostic studies to confirm that the condition is present. Most women who are diagnosed with endometriosis are between 25 and 35 years of age. Women may have symptoms for years before a definitive diagnosis is made.

- During pelvic surgery for any gynecologic condition, about 1% of women are observed to have endometriosis. The percentages are much higher in young women undergoing laparoscopic surgery for pelvic pain and in women undergoing laparoscopic surgery to evaluate infertility.

- Endometriosis is more common in Caucasian women than in African American or Asian women. Studies have also reported that endometriosis tends to occur most commonly in taller, thin women with a low body mass index (BMI).

- Women with first degree relatives who have endometriosis are also more likely to develop the condition, suggesting that the genes a woman inherits from her parents can sometimes predispose her to develop endometriosis.

Endometriosis Causes

In reviewing the causes of endometriosis, it is important to first understand the regular menstrual cycle and how hormones in the body affect the menstrual cycle and the uterus itself.

- The endometrium is the inner layer of uterine tissue that is shed during menstruation.

- The thickness of the endometrial layer is related to the egg-producing (ovulatory) cycle and the hormonal levels that regulate this cycle.

- The endometrium is at its thinnest immediately following menstruation and thickens during the first two weeks of the menstrual cyle.

- Once the release of the egg (ovulation) has occurred, the endometrial tissue becomes rich in glands.

- The whole process prepares the uterus for the attachment of a fertilized egg. If implantation does not occur, the endometrial layer is shed, and bleeding, known as menstruation (a period), begins.

- Endometriosis occurs when growth of this endometrial tissue develops outside the uterus. This growth usually occurs within the pelvic region on the ovaries and other pelvic structures, such as the bladder and colon, but it may also occur within the abdominal cavity and as far away as the lungs, arms, legs, and even the brain.

- Hormone levels affect the course of endometriosis.

- Because the levels of hormones that affect endometriosis are related to the menstrual cycle, it is uncommon for women to develop endometriosis before menstrual cycles begin or after menopause.

- Endometriosis is also noted to be less severe when hormone levels are more constant. These conditions include pregnancy and other times when there is lack of a menstrual cycle.

Several theories may explain how endometriosis develops as follows:

- One popular theory focuses on a potential process known as **retrograde menstruation**. Retrograde menstruation can be thought of as backward flow during a period. This is also known as the
implantation theory
.

- Menstrual products, including endometrial cells, may escape into the body through the Fallopian tubes and are deposited onto internal structures such as the ovaries, the bladder, and

portions of the large intestine.

- These cells, once deposited, are able to respond to progesterone and estrogen in much the same way as normal endometrial tissue within the uterus.

- The growth of this misplaced endometrial tissue can cause distortion of abdominal and pelvic structures and causes the development of adhesions (scars) within the abdominal and pelvic cavities.

- Endometrial tissue can be found on the outside of the uterus, the space between the uterus and the colon known as the posterior cul-de-sac, the supporting ligaments of the uterus, the ovaries, the urinary bladder, and other internal structures.

- However, it is unlikely that retrograde menstruation alone is the cause of endometriosis, since retrograde menstruation has been shown to occur commonly in many women. Other causative factors may play roles in determining which women develop endometriosis.

- Another theory, also known as **coelomic metaplasia**, suggests that a layer of cells surrounding the ovaries and other cells within the pelvic region are able to change into endometrial cells that are much the same as normal endometrial tissue. It is not certain what causes this development, but evidence suggests irritation by retrograde menstrual flow or infections may be the culprit.

- Transfer of endometrial tissues by a **surgical procedure** might be the cause for endometriosis implants seen in surgical scars (for example, episiotomy or Cesarean section scars).

- The rare cases of endometriosis that develop in the brain or other distant organs are likely due to the spread of endometrial cells via the bloodstream or lymphatic system.

- Some studies have shown alternations in the immune response in women with endometriosis, suggesting that **abnormalities in the immune system** may play a role in the development of the condition.

Endometriosis Symptoms

Endometriosis varies in symptoms and severity depending on the woman and the timing of the menstrual cycle.

- Endometriosis may not produce any specific symptoms, and the women may not be aware of the condition. In fact, most women with endometriosis do not have any specific symptoms of the condition.

- The most common symptom noted by women with endometriosis is pelvic pain that is worse just before menstruation, which then improves at the end of the menstrual period.

- Other common symptoms are increased pain during menstruation (dysmenorrhea), pain with sexual intercourse (dyspareunia), and infertility.

- Infertility is a common symptom of endometriosis; although not all women who have fertility problems have endometriosis. The exact mechanism by which endometriosis causes infertility is not clear; it may involve physical blocking of the Fallopian tubes due to implants or scarring, or hormonal factors related to the presence of the endometriosis implants.

- The age at which endometriosis develops varies considerably. Some adolescent women note painful menstruation when their periods first begin. This condition is later diagnosed as endometriosis, while other women are in their 20s, 30s, or older before endometriosis is diagnosed.

- Women often describe the pain as a constant, aching pain that is deep and often spreads to both sides of the pelvic region, the lower back, abdomen, and buttocks.

- There is no correlation between the severity of the symptoms and the amount of disease (the degree or extent to which endometriosis implants are present).

- Many women with endometriosis have no findings on physical examination that could suggest the diagnosis, and symptoms provide the only clues to the diagnosis.

- Although physical examination findings cannot positively diagnose endometriosis, the doctor may find pelvic nodules that are tender during a physical exam or masses in the ovaries that are common signs of the condition.

- An area of endometriosis on the ovary that has become enlarged is referred to as endometrioma. When the center of this fills with blood, it is known as a chocolate cyst, referring to the appearance of the tissue. Chocolate cysts can become very painful, mimicking the symptoms of other ovarian problems.

When to Seek Medical Care

Because endometriosis is a chronic disease, it may come on gradually. A woman will want to schedule regular care with a women's care clinician or gynecologist (a physician who specializes in women's sexual organs). If the woman's pain changes dramatically over a short period of time or unexpected symptoms develop, it is reasonable to go to a hospital emergency department.

- In general, call a health care practitioner to investigate new or worsening pain associated with menstruation, sexual activity, or daily activities.

- Any pain that limits a woman's usual daily activities should be evaluated.

Endometriosis Diagnosis

Endometriosis cannot be diagnosed with certainty by symptoms and physical examination alone. The healthcare practitioner may consider other conditions such as infections or tumors. One condition that may have similar symptoms to endometriosis is interstitial cystitis, or chronic inflammation of the bladder. Direct visualization of the endometriosis implants, typically via laparoscopic surgery, provides the definitive diagnosis. In order to diagnose endometriosis, the following steps may be taken:

- A biopsy of the suspected tissue may be accomplished by laparoscopy. During laparoscopy a tiny camera is inserted through small incisions in the patient's abdomen. Instruments are used to remove a small piece of tissue that is examined in the laboratory. More invasive surgery, called laparotomy, requires a larger surgical incision and does not rely on the use of a surgical camera.

- During surgery, samples of the suspected areas are taken and evaluated by a pathologist. Microscopic examination of tissue samples taken during surgery may reveal endometrial cells in areas outside of the uterus.

Classification of Endometriosis (Stages)

A number of different classification systems have been developed for staging endometriosis. Although the stage (extent) of endometriosis does not relate to the severity of clinical symptoms, it may be useful in predicting a woman's chances of fertility.

Typically, endometriosis is classified as minimal, mild, moderate, or severe based upon visual observations at laparoscopy. Minimal disease is characterized by isolated implants and no significant adhesions. Mild endometriosis consists of superficial implants less than 5 cm in aggregate without significant adhesions. In moderate disease, multiple implants and scarring (adhesion) around the tubes and ovaries may be evident. Severe disease is characterized by multiple implants, including large ovarian endometriomas along with thick adhesions

Endometriosis Treatment

Once a diagnosis of endometriosis has been made, the woman and her healthcare practitioner will discuss treatment options.

Endometriosis Self-Care at Home

If a woman increases her level of physical activity daily, the amount of pain associated with endometriosis may decrease. Researchers are uncertain as to the cause of this relationship and have noted that increased exercise does not reduce pain in all women. As in the case of any chronic condition, lifestyle changes like regular exercise and consumption of a healthy diet are recommended.

Endometriosis Medical Treatment

Managing pain is the cornerstone of successful treatment because pain is the most common reason women with endometriosis seek health care.

Endometriosis Medications

To halt or slow the progression of endometriosis, the doctor will start by prescribing medication. Surgery is recommended only if medications fail, unless there is severe or advanced disease or a suspicion of cancer.

- The primary therapy initially recommended for the pain of endometriosis is a nonsteroidal antiinflammatory drug (NSAID) such as ibuprofen (Motrin or Advil) or naproxen sodium (Aleve).

- If NSAIDs are not sufficient for pain control, her doctor may prescribe stronger medications, even including opioid (narcotic) drugs. Care should be taken when using these drugs due to the possibility for abuse and addiction.

Depending on the severity of the disease, the next step in the treatment of endometriosis is to slow or halt the proliferation of the endometrial tissue outside of the uterus. Different treatment strategies may be employed to change the hormone levels that promote endometriosis.

Gonadotropin-releasing hormone analogs (GnRH analogs)

Gonadotropin-releasing hormone analogs (GnRH analogs) may be prescribed to relieve pain and reduce the size of endometriosis implants. GnRH analogs are administered by nasal spray or by intramuscular injections at one to three month intervals. These drugs suppress estrogen production by the ovaries, resulting in a cessation of menstrual periods, and symptoms mimicking those of the menopausal transition including hot flashes, vaginal dryness, irregular vaginal bleeding, mood changes, fatigue, and loss of bone density (osteoporosis). Fortunately, many of the annoying side effects due to estrogen deficiency can be avoided by administering small amounts of estrogen and progesterone in pill form.

Oral contraceptive pills

Oral contraceptive pills (OCPs, estrogen and progesterone in combination, birth control pills) are also sometimes used to treat endometriosis in women who also desire contraception. Weight gain, breast tenderness, nausea, and irregular bleeding may be mild side effects.

Progestins

Progestins [for example, medroxyprogesterone acetate (Provera), norethindrone acetate (Aygestin, Camila, Errin, Jolivette, Nor-QD, Nora-Be, Ortho Micronor), norgestrel acetate (Ovrette)] are more potent than birth control pills and are sometimes used in women who do not obtain pain relief from OCPs. Side effects include breast tenderness, bloating, weight gain, irregular uterine bleeding, and depression.

Androgens

Danazol (Danocrine) is a synthetic drug that stimulates high levels of androgens (male type hormones) and low estrogen levels by interfering with ovulation and ovarian production of estrogen. This drug is effective for pain relief and shrinkage of endometriosis implants, but has

a high incidence of side effects including:

- weight gain,
- edema,
- decreased breast size,
- acne,
- oily skin,
- hirsutism (male pattern hair growth),
- deepening of the voice,
- headache,
- hot flashes,
- changes in libido, and
- mood changes.

All of these changes except for voice changes are reversible, but the return to normal may take many months. Danazol should not be taken by women with certain types of liver, kidney, and heart conditions.

Aromatase Inhibitors

Another strategy is the administration of drugs known as aromatase inhibitors [anastrozole (Arimidex) and letrozole (Femara) are examples]. These drugs disrupt estrogen formation within the endometriosis implants themselves. They also inhibit estrogen production in other areas of the body. Aromatase inhibitors cause significant bone loss with prolonged use. A further drawback is that these drugs stimulate development of multiple follicles at ovulation, so they must be used with caution in premenopausal women and may be combined with another medication such as a GnRH agonist or oral contraceptive pill to suppress the development of follicles.

Endometriosis Surgery

If treatment with medications does not work or is not appropriate for a woman, surgery can be considered if she has severe pain or severe damage to the pelvic structures.

- Laparoscopic surgery (a minimally invasive, camera-guided surgical procedure) may be used in an attempt to remove all endometrial tissue outside of the uterus. This removal is often performed during the surgery when endometriosis is diagnosed.

- Surgery to remove the uterus and ovaries, called a hysterectomy, is considered for women who fail medical therapy and no longer wish to have additional children.

- Although surgery can be very effective, endometriosis may recur following surgery. Some studies have shown the recurrence rate of endometriosis following surgical treatment to be as high as 40%.

- Most women find relief from symptoms once menopause is complete and when the levels of hormones responsible for promoting this disease diminish.

Endometriosis Next Steps

Because the levels of hormones that affect endometriosis are related to the menstrual cycle, endometriosis can be expected to lessen in intensity or, at the very least, stabilize during periods when hormonal levels are not in constant fluctuation. These conditions include pregnancy and other times when there is a lack of menstruation. Women also tend to notice a reduction in their symptoms once they reach menopause.

Endometriosis Follow-up

Endometriosis is a chronic condition. If a woman develops this disease, she will benefit from developing a long-lasting relationship with her doctor or gynecologist, who can direct her treatment and follow her response to therapy

Endometriosis Prevention

Research suggests that frequent and early pregnancy, use of oral contraceptives, and daily exercise may all help decrease the overall incidence and severity of endometriosis

Endometriosis Prognosis

Women experience a wide variety of responses to medical and exercise therapy. Responses range from complete resolution of symptoms to no relief and further progression of the disease. Hysterectomy with removal of the ovaries essentially causes menopause, and women who have this procedure can expect a considerable decrease in symptoms.

- Studies have shown women who have endometriosis are more likely than other women to have disorders in which the immune system attacks the body's own tissues. These include:

- lupus,

- Sjogren syndrome,

- rheumatoid arthritis, and

- multiple sclerosis.

- Researchers also found that women with endometriosis are more likely to have chronic fatigue syndrome and fibromyalgia (a disease involving pain in the muscles, tendons, and ligaments).

- Women with endometriosis are more likely to have asthma, allergies, and eczema (a skin condition).

- Hypothyroidism (an underactive thyroid gland) is more common women with endometriosis.

- Women with endometriosis also have a mildly increased risk for development of certain types of cancer of the ovary. This risk seems to be highest in women with endometriosis and primary infertility (those who have never borne a child), but the use of oral contraceptive pills appears to significantly reduce this risk.

- **Infertility:** Endometriosis is known to be a common cause of infertility in women, but it does not always cause infertility.

- Research has shown that many women with untreated endometriosis have a decreased ability to conceive.

- Issues concerning infertility are best discussed with a doctor, gynecologist, or fertility specialist; who can guide a woman toward appropriate treatment options.

- **Pregnancy:** If a woman is successful in becoming pregnant with endometriosis, she can expect the disease to have little, if any, impact on her pregnancy.

- Because pregnant women do not have the changes in hormone levels that happen with ovulation and menstruation, they typically do not experience many of the symptoms associated with endometriosis.

- If a woman is concerned about symptoms during pregnancy that might be associated with endometriosis, she should consult her doctor for more information and an evaluation.

Synonyms and Keywords

endometriosis, endo, uterus, chronic pelvic pain, ectopic endometrial implants, ectopic pregnancy, endometriosis externa, retrograde menstruation, chocolate cyst, uterine tissue, pain during intercourse, endometriosis stages