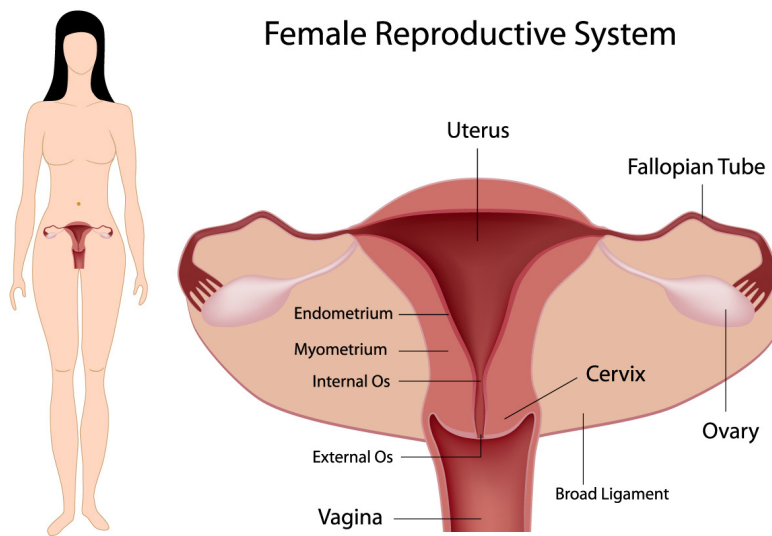


## About the Menstrual Cycle:

The ovaries play a very important part in women's lives. They are found in the lower part of the pelvis near the ends of the fallopian tubes. They contain thousands of eggs, also known as ova. Each egg is held within a structure called a follicle.



The menstrual cycle is counted from Day 1 of a menstrual period until Day 1 of the next period and is an average of 28 days long (between 25 and 35 days is considered to be normal).

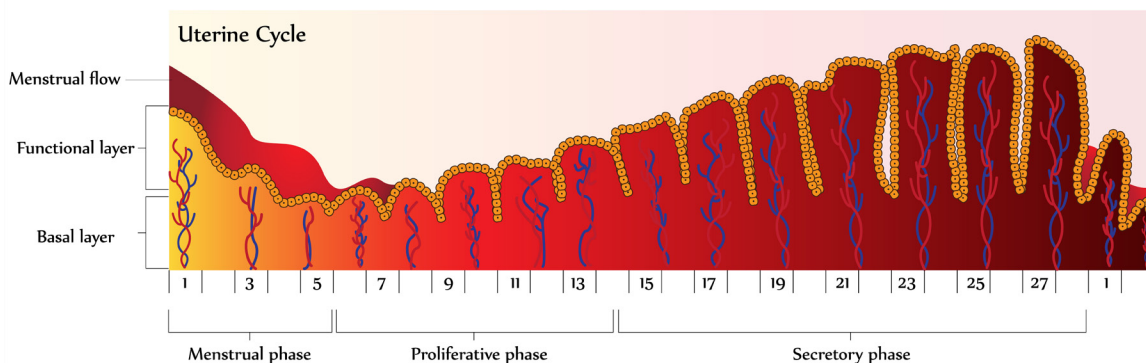
Just as a period is ending, an area of the brain produces a hormone that travels through the blood stream. (Hormones are chemicals produced by the body. They control or regulate the actions of certain cells or organs). This hormone causes the ovaries to start preparing an egg for ovulation. As the egg matures, its follicle produces another hormone called estrogen. Estrogen causes the lining of the uterus (endometrium) to become thicker.

When the egg is mature and the amount of estrogen has reached a certain level, another hormone sent from the brain causes the egg to be released from the ovary. This is called ovulation. It occurs about 14 days before the next period begins.

The cells remaining in the follicle form the corpus luteum. The corpus luteum produces estrogen and another hormone, progesterone, over the next 2 weeks. The hormones cause the lining of the uterus to become thicker and rich with blood vessels to support a pregnancy. This is called the pre-menstrual phase of the cycle.

If there are sperm in the fallopian tubes, the egg may become fertilized. The fertilized egg then moves through the tube to the uterus. If it implants, a pregnancy has been started.

If no pregnancy occurs, the corpus luteum will break down and stop producing hormones. This causes the lining of the uterus to be shed, and is known as the menstrual period.



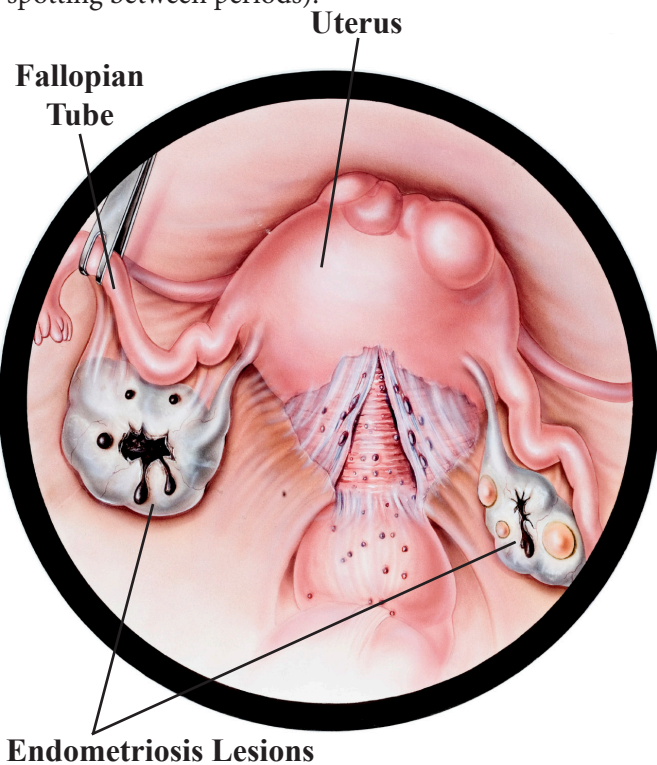
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## About the Menstrual Cycle and Pelvic Pain:

Many women have some cramps or discomfort before or during their menstrual periods. In women with endometriosis the pain can be very severe. It may occur throughout the menstrual cycle. It is often much worse during the menstrual period.

Endometriosis is a condition in which the tissue that lines the uterus (the endometrium) is also present in areas within the pelvis and outside of the uterus. During each menstrual cycle the endometrial tissue outside of the uterus responds to hormone signals in the same way that the endometrium inside the uterus does. It builds up and then breaks down, causing the release of Prostaglandin (a hormone that causes muscles to cramp) along with areas of inflammation and pain.

Endometriosis also causes the lining of the uterus (the endometrium) to act differently. It produces a higher level of hormones such as prostaglandins that cause severe cramping and pain. These hormones also sometimes cause abnormal bleeding (heavy periods or spotting between periods).



One of the treatments for endometriosis uses hormones that stop the menstrual cycle. This reduces the activity of endometrial tissue and results in less pain and bleeding.

## Hormonal Treatments for Endometriosis and Pelvic Pain

There are four levels of treatment that can be used to stop (suppress) the natural menstrual cycle in order to control pelvic pain:

### Step One: Ovulation suppression using the Birth Control Pill, Birth Control Patch, or Vaginal Ring

Most birth control pills (BCP), the contraceptive patch (Evra®) and contraceptive ring (NuvaRing®) contain a combination of two hormones, estrogen and progesterone. If taken or used for 21 days, starting from the first day of the menstrual cycle with no breaks, the levels of these hormones in the woman's body do not rise and fall. The ovary is not signalled to prepare an egg, and ovulation does not happen. The lining of the uterus (endometrium) does not build up as much as it usually does.

When the woman stops taking the two hormones (usually after 21 days), she experiences a withdrawal bleed. This is the shedding of the small amount of endometrium that grew while she was taking the hormones.

Some BCP packages contain 28 pills, 21 of which contain hormones. The last 7 pills contain no hormones. The withdrawal bleed happens during the week the woman takes the last 7 pills.

The Ortho Evra® Patch and NuvaRing® also contain estrogen and progesterone and are used for the first 21 days of the menstrual cycle. The withdrawal bleed happens during the following 7 days. The patch and the ring are very helpful for women who may not always remember to take a daily pill.

Known benefits of using a combination of estrogen and progesterone for ovulation suppression:

- Reduces menstrual cramps and pain throughout the cycle
- Conditions such as excess hair growth, acne, oily skin and pre-menstrual symptoms are improved
- Lowers the risk of anemia, pelvic infection, tubal pregnancy, and painful ovarian cysts
- Gives a protective effect against endometrial and ovarian cancer (in long term users).

- Provides contraception. Fertility returns quickly for most women when pregnancy is desired and the medication is stopped.

**Possible Side effects include:**

- Breast tenderness
- Nausea
- Mood and weight changes (visit [www.contraceptiononline.com](http://www.contraceptiononline.com) for more details).
- Headaches
- Changes in libido (sexual desire)
- Blood clots in the legs or lungs (thrombosis) ( a risk for a small number of women)
- High blood pressure, heart attack and stroke (very rare in healthy women)
- Possible slight association with breast and cervical cancer (not proven)

The side effects usually get better by the end of the 3rd month. They all go away when the pill, patch or ring is stopped. Women who have side effects that do not go away may find a different brand of BCP to be helpful.

The use of combined estrogen and progesterone is not recommended for women who have the following conditions:

- Problems with blood circulation such as high blood pressure, blood clots, heart attack, stroke
- Certain types of cancers
- Undiagnosed uterine bleeding
- Liver, gall bladder, chronic renal disease, or uncontrolled diabetes
- Smokers after age 35
- Suspected pregnancy
- Certain types of migraines
- Epilepsy
- Are close to the time of planned (elective) surgery



**Step Two: Suppression of Menstruation through continuous Use of the Birth Control Pill, Birth Control Patch, Vaginal Ring, or Levonorgestrel IUD (intrauterine device)**

If Step One does not help, the BCP, Ortho Evra® Patch or NuvaRing® can be used daily to try to avoid a withdrawal bleed. This is a more effective way to control pelvic pain. Studies have shown that it is very safe.

The only problem with this approach is called “break through bleeding” (BTB). This is dark coloured, black or red spotting, or it may be a light blood flow that happens on and off during the month. This occurs because the lining of the uterus (endometrium) has become thin but has grown small veins that bleed easily. It is not dangerous, but can be very annoying. It may also be painful for some women.

This can be solved by stopping the hormone medication for 5 or 6 days. This allows the lining to be cleared out. During the time without the hormones, the bleeding and pain might be worse, but will stop as soon as a new cycle of medication is started. This way, the woman can control her bleeding pattern.

**The Levonorgestrel (Mirena®) IUD**

The levonorgestrel (Mirena®) IUD is inserted into the uterus. It releases a steady dose of Progestin which affects the uterus but is present at a very low level. Ovulation still occurs for most women. Placing the Mirena at the time of surgery increases the effect and the duration of pain relief after surgery.

If you choose this option, you will need to buy the IUD at a Pharmacy (approximately \$350.00.). It works best to insert the IUD during a menstrual period to minimize abnormal bleeding.

**Step Three: Mild Estrogen Suppression using continuous Progesterone (progestin)**

Progestins (synthetic progesterone) are drugs that are taken as a pill or by injection on a regular (daily or weekly) basis. Progestins act to suppress or stop ovulation and lower estrogen levels in the body. They are called second line treatment and are much more effective than BCP in controlling pelvic pain. This is because they have an anti-inflammatory effect on the endometrium.

Examples of progestin medications used to lower estrogen levels are Depo Provera®, Visanne®, Norlutin® and Megace®. The main side effects of these medications are breakthrough bleeding and weight gain.

Forty to 50 percent of women experience some form of break through bleeding. For most women, this improves over several months of the treatment.

Weight gain is usually caused by changes to the metabolism that affect how the body deals with carbohydrates. Some women have a greater tendency for this effect. A healthy diet that is low in carbohydrates from breads, pasta, sugars and processed foods can help avoid these changes. A regular exercise program can also promote both physical and emotional health.

A small number of women experience mood changes that may include depression or irritability, and some women experience vaginal dryness and hot flushes if their estrogen levels get very low.

Progestins also lower bone mineral density and can affect cholesterol levels. These effects are not considered important in healthy women in the reproductive age group. If progestins are well tolerated, they can be used for many years until fertility is desired. With the use of oral progestins, fertility returns when the medications are stopped. The delay may be a few months after stopping progestins given by injection.

Another possible treatment is the use of a synthetic androgen (male) hormone called Danazol®. It is given vaginally to have a local effect on nearby endometriosis, but is present at very low levels in the rest of the body and does not stop ovulation. The side effects are similar to those of progestins but can also include excess hair growth, acne and oily skin. These side effects are infrequent when Danazol is given vaginally. The side effects go away after the use of Danazol is stopped.

## Step Four: Deeper Estrogen Suppression using GnRh (Gonadotropic Releasing Hormone) Agonists

These include Lupron® (given by injection) and Synarel® (given by nasal spray). They are the most effective drugs for stopping estrogen production and menstrual cycles and decreasing the symptoms of endometriosis. After the first 2 weeks of use, 95% of women have no bleeding of any kind.

The side effects include hot flushes, insomnia, vaginal dryness and loss of bone density. A small number of women experience unstable moods, depression, irritability, intrusive thoughts and anxiety. There is no weight gain due to these medications.

Side effects can be eliminated using “add back” treatment. This involves a small amount of estrogen and progesterone or progesterone alone to prevent hot flushes and bone loss. Using this approach does not lower the effects of the GnRh agonists on endometriosis, so “add back” is usually recommended. This combination can be continued for long periods of time, but is expensive.

More information can be found at: [www.endometriosis.org](http://www.endometriosis.org)

