



X-Plain™ *Hydrothermal Endometrial Ablation*

Reference Summary

Introduction

A hydrothermal endometrial ablation also known as HTA is a procedure that allows doctors to destroy the inner lining of the uterus. It is one way to treat women who experience too much menstrual bleeding or if menstrual bleeding is irregular.

Your doctor may recommend that you have an HTA. The decision whether not to have this procedure is yours.

This reference summary will help you to understand the benefits and risks of hydrothermal endometrial ablation. It covers the indications, benefits, alternative treatments, risks, and what to expect after the procedure.

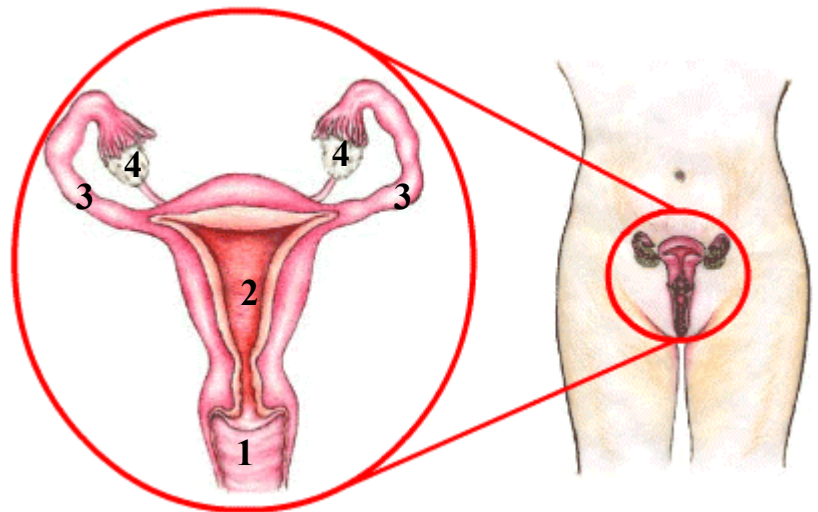
Anatomy

The following section reviews the anatomy of the female reproductive organs. The female reproductive organs include:

1. The vagina
2. The uterus
3. The fallopian tubes and
4. The ovaries

These organs are located in the pelvis between the urinary bladder and the rectum.

The main functions of the ovaries are to release hormones and release eggs. The ovaries' main hormones are called estrogen and progesterone.



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The ovaries release monthly one or more eggs needed for reproduction. This is known as ovulation. The hormone estrogen and progesterone help to control the cycle of ovulation. Estrogen and progesterone also prepare the inner lining of the uterus for pregnancy.

When the ovaries release an egg, it travels down through the fallopian tube to the uterus, where it can be fertilized. If the egg becomes fertilized, it will attach itself to the lining of the uterus. The uterine lining becomes thicker in case the egg is fertilized. The inner lining of the uterus is called the endometrium

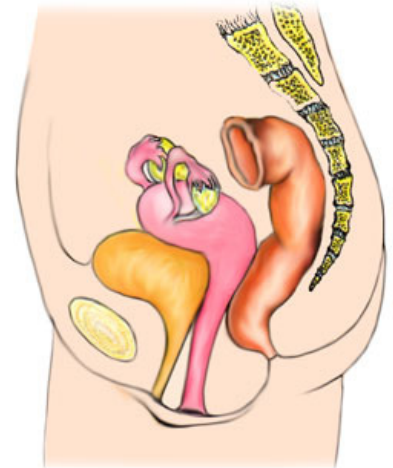
If an egg is not fertilized, the body sheds it with the thick inner lining of the uterus. The body gets rid of the extra tissues and the egg through the vagina. This process is commonly known as the menstrual period.

As menopause approaches, menstrual periods become irregular and eventually stop. This period is known as perimenopause. In time, the ovaries quit producing hormones and releasing eggs completely; this is known as menopause.

The lowest part of the uterus is called the cervix. The cervix leads to the vagina. The vagina is a canal that leads to the outside of the body. It is located between the urethra¹ and the rectum.

The uterus is held in place with ligaments. These ligaments help prevent the uterus from slipping out of place and down into the vagina.

The bladder is located in front of the vagina and uterus. The kidneys drain urine into the bladder through two tubes called ureters.



The intestines and the rectum are located above and behind the vagina and uterus.

Symptoms and their Causes

Uterine bleeding is a condition where more blood comes out of the vagina than normal. It can happen for many different reasons, which are explained in this section.

Uterine bleeding can interfere with a person's social life and daily activities. For instance, a woman with excessive bleeding may have to take time to change her sanitary pad every hour. Uterine bleeding can also cause bad health side effects, like anemia² or weakness.

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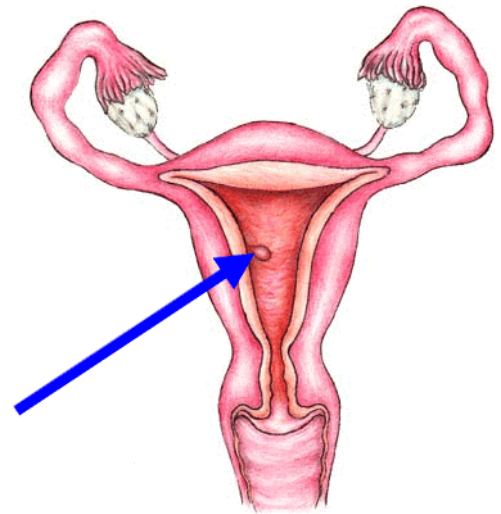
Most women have regular periods with bleeding that lasts about 4 to 5 days every 28 days. Some women have irregular periods or periods that last a long time with heavy blood flow. When a period lasts a long time with heavy bleeding, it is known as menorrhagia.

Heavy periods can cause you to lose a large amount of blood. Intense cramping and abdominal discomfort often happens with menorrhagia. There are many reasons for unusually heavy menstrual bleeding including some of the following conditions.

Hormonal imbalances can cause unusual bleeding, especially around menopause.

Benign or non-cancerous tumors can also cause excessive bleeding. These tumors are known as fibroid tumors. They are located in the muscular layer of the uterus and can grow to a very large size, causing cramping and pain. They can also put pressure on nearby organs.

Parts of the inner lining of the uterus, or endometrium, may sprout out, becoming as large as a grape and hang inside the uterus. The grape-sized “sprouts” are called polyps. Polyps are usually not cancerous but they can cause abnormal bleeding.



Cancers involving the uterine lining can cause abnormal bleeding.

Abnormal bleeding can be caused by a uterine septum. A uterine septum is a condition where the uterus is divided on the inside into sections by extra tissue. If you are pregnant, a uterine septum can cause a miscarriage. The tissue dividing the uterus may have to be removed surgically.

Sometimes the inside of the uterus can develop scar tissue. This tissue can cause a lot of bleeding, irregular periods and even make pregnancy impossible.

The inner lining of the uterus can grow into the middle muscular layer of the uterus. This is known as adenomyosis. Adenomyosis causes pain, cramping and abnormal bleeding.

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Treatment Options

Your gynecologist will do an examination, run some blood tests, and may even do an ultrasound to try and find out the reason for your abnormal bleeding.

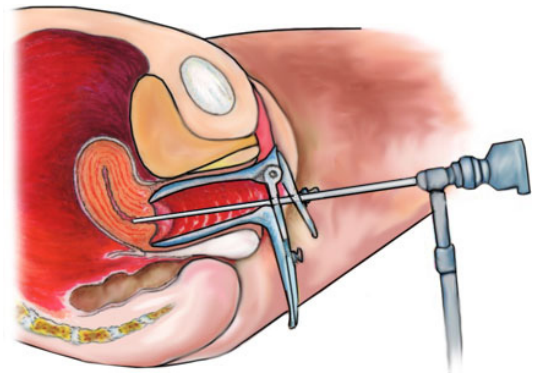
If the uterine bleeding is caused by a hormonal imbalance, your doctor may suggest you take birth control pills or progesterone.

You may also be asked to do a hysteroscopy. A hysteroscopy is a test where a scope is inserted inside the uterus. This allows your doctor to get a better look at the uterus and to make sure there are no other problems. This test is often performed at the same time as an HTA.

If the doctor finds the cause of bleeding during the hysteroscopy, he or she may be able to take it out or treat it with special instruments inserted through the scope.

If after the hysteroscopy your doctor is unable to

find and treat the reason for your bleeding problem, he or she may perform an HTA. An HTA is a procedure created to destroy the endometrium, the inner lining of the uterus. In most cases, HTA decreases heavy and irregular bleeding. Sometimes it can stop the bleeding completely.



Before the Procedure

Because this procedure aims at getting rid of the endometrium, future pregnancies are usually not possible. Because of this, it is very important to be sure that you do not want any more children.

Tell your gynecologist if you have any allergies, including allergies to drugs, foods, and substances like latex. Also, tell your doctor if you have any medical conditions, such as previous operations, heart trouble, breathing difficulties and previous infections.

Make sure your doctor knows all the medications you are taking. This includes all prescriptions, over the counter medicines and any supplements or herbal medicines. Make sure to tell your doctor whether you could be pregnant. It is important to do this because an HTA will end a pregnancy.

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Your gynecologist may give you some medications. This is to help your uterus get ready for the operation. Make sure to take it as prescribed.

Procedure

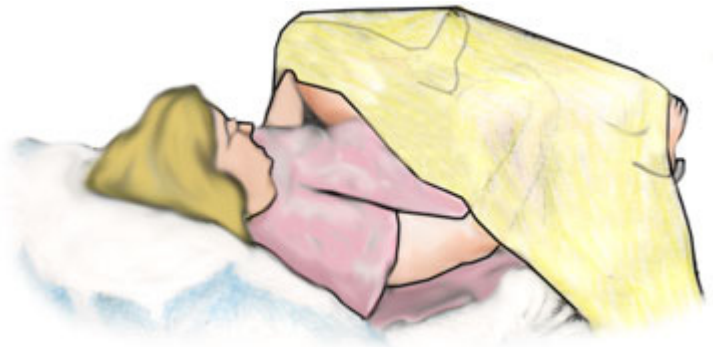
There are many ways to destroy the inner lining of the uterus. This module discusses a procedure called HTA. During HTA, heated water is flushed with controlled pressure inside the uterus. This permanently removes the tissue of the endometrium by burning it.

The procedure is usually done in a hospital or in a surgery center setting under general anesthesia. This means you will be put into a deep sleep and feel no pain. It is an outpatient procedure, which means you will go home the same day.

Before starting the HTA procedure, your gynecologist will perform a hysteroscopy. During a hysteroscopy, a scope is inserted inside the uterus, so the doctor can get a closer look at the uterus.

During the procedure, your feet will be placed in stirrups. The vaginal area is then cleaned to prevent infections.

A speculum is inserted into the vagina. A speculum is a tool that helps your doctor keep the vagina open during the procedure. This is usually not painful but it can be uncomfortable. You can reduce discomfort or pain caused from the speculum by relaxing. It is important to tell your doctor if you feel any pain or discomfort.



The cervix will be numbed with a local anesthetic such as lidocaine. Local anesthesia numbs a specific area, and you should not feel any pain in that area. After the cervix has been numbed it is dilated, or made wider, with special instruments.

When the cervix is wide enough, a scope is inserted into the uterus. Fluid will be moved through the scope into the uterus. This makes it easier for your doctor to examine the uterus. You may feel this liquid dripping out as it drains.

During this procedure, your doctor will look at the uterus and the openings of the fallopian tubes. If the doctor finds polyps and abnormal-looking tissues, they can be taken out with special instruments inserted through the scope.

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If a uterine septum is found, the tissue can be removed. If needed, your doctor may take a sample of the inner lining to check for cancer cells.

If, after hysteroscopy, your doctor is unable to find and treat the reason for your bleeding problem, he or she will start the HTA. First, the anesthesiologist will administer general anesthesia.

The procedure will use the scope, a special computer-controlled pump and a water heater. During an HTA the water is heated to 90° Celsius or 194° Fahrenheit and is flushed into the uterus for 10 minutes. This causes the destruction of the endometrium.

The water pressure is closely monitored. If there is any change in water pressure, the water is immediately sucked out. Because of this, water stays in the uterus and does not go into the fallopian tubes or the abdomen.

After 10 minutes, the water is drained out. The hysteroscope is then removed.



Risks & Complications

This procedure is very safe. There are however, several possible risks and complications. These are very unlikely, but possible. You need to know about them just in case they happen. By being informed, you may be able to help your doctor detect complications early.

The risks and complications include

- those related to anesthesia,
- those related to any type of surgery, and
- risks specific to this procedure.

Risks of general anesthesia include nausea, vomiting, problems with urination, cut lips, chipped teeth, sore throat, and headache.

More serious risks of general anesthesia include heart attacks, strokes, and pneumonia.

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Your anesthesiologist will discuss these risks with you and ask you if you are allergic to certain medications.

Blood clots in the legs can occur. These usually show up a few days after surgery. They cause the leg to swell and hurt. These blood clots can come loose from the leg and go to the lungs where they can cause shortness of breath, chest pain and possibly death. Sometimes the shortness of breath can happen without warning.

It is extremely important to let your doctors know if any of these symptoms occur. Walking shortly after surgery helps to decrease the risk of blood clots in the legs.

Some risks, such as infection and bleeding, are seen in any type of surgery.

- Infection can occur in the reproductive organs or inside the pelvis and abdomen. Infection can be treated with antibiotics. Rarely an operation may be needed.
- Bleeding can occur either during or after the operation. If needed, blood can be replaced through a blood transfusion.



Other risks and complications are related specifically to hysteroscopy and HTA. The risks are very rare. However, it is important to know about them.

Because of the way the legs are positioned in the stirrups, a nerve near the knee can be placed under tension resulting in some leg weakness and numbness. This is very rare.

Rarely, structures in the pelvis and abdomen can be injured during the procedure, especially if there is a lot of scarring from previous surgeries. The uterus and Fallopian tubes can be injured, requiring another operation to fix the injury.

In extremely rare cases, the intestines and blood vessels could also be affected, requiring another operation.

Even though highly unlikely, the fluid used in HTA may leak into the abdomen or in the vagina causing burns and scarring.

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It is very rare for the bladder and the tubes connecting the kidneys to the bladder to be injured. However, if this does happen, another operation may be necessary and could result in the loss of a kidney.

In extremely rare situations, small nerves in the pelvis may be injured resulting in decreased sensation in the sexual organs. This can lead to sexual dysfunction.

Because this procedure aims at destroying the endometrium, future pregnancies are usually not possible. This is why this procedure is done only when the woman is sure that she does not want any more children.

The ovaries are not affected during this procedure, so ovulation will still occur.

If an egg is fertilized, it usually is unable to attach itself to what is left of the endometrium since most of it is gone.

Even if there is some endometrium left, it usually is not able to carry on a pregnancy. If a pregnancy occurs after an HTA, it usually ends up in a miscarriage. Even though this operation makes it extremely unlikely for a woman to get pregnant, pregnancy is still possible but rare. HTA does NOT protect against sexually transmitted diseases.

HTA is generally a very successful procedure. However, there is always the possibility that some patients may not be helped by this operation.

After The Procedure

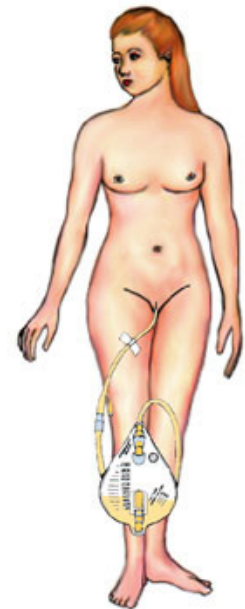
After the procedure, you will be taken to a recovery ward where you will be allowed to recover from general anesthesia.

A tube may be placed in your bladder to help empty urine. This tube is called a Foley catheter and will be removed before leaving the hospital.

Some cramping and vaginal bleeding are expected after a hysteroscopy and an HTA.

Over the counter medications and prescription drugs usually help with the cramps. Make sure to ask your doctor which medication you should use.

You should call your doctor if bleeding becomes excessive or if you notice foul smelling discharge. These may be signs of



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complications. You should also call your doctor in cases of severe abdominal pain, fever, chills, leg pain or any other unusual symptoms.

You should not have sexual intercourse or put anything inside the vagina until your doctor says it is okay to do so.

You will need to take short walks to help blood circulate in your legs and prevent blood clots from forming. Most patients will not experience periods after this procedure. Others will have lighter and shorter periods.

Conclusion

Some women experience irregular or heavy menstrual bleeding. When bleeding is abnormal and your doctor cannot treat it through other treatment options, she or he may suggest a hysteroscopy with an HTA.

A hysteroscopy is a procedure where a scope is inserted into the uterus to diagnose and possibly treat uterine bleeding. If hysteroscopy cannot treat the cause of the uterine bleeding, the doctor may perform an HTA.



HTA is a procedure where heated water is flushed into the uterus to destroy its inner lining. This procedure reduces uterine bleeding and in some cases stops it all together. HTA is a permanent procedure, and pregnancy may not be possible afterwards.

HTA is a safe and successful procedure. Like any other surgical procedure, hysteroscopy and HTA have certain risks. Knowing about them may help you detect and treat them early if they happen.

¹ The urethra is the tube that carries urine from the bladder to the outside of the body.

² Anemia is a low count of red blood cells in the blood.