



## Features of Ultrasound Examination of Gynecological Diseases

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**Abstract:** Ultrasound examination method is currently one of the leading in the diagnosis of diseases of the female genital area, because it is highly informative and has no contraindications. Regular examinations by a gynecologist, as well as ultrasound of the pelvic organs, will help to recognize the problem in time if it occurs and take appropriate measures to eliminate it.

**Keywords:** ultrasound method, pelvic organs, gynecology, pregnant women

Ultrasound is generally considered a safe way to obtain information. Diagnostic ultrasound examination of the fetus is also generally considered as a safe method for use during pregnancy. This diagnostic procedure should be used only if there are compelling medical indications, with such a shortest possible period of exposure to ultrasound that will allow you to obtain the necessary diagnostic information, that is, according to the principle of the minimum permissible.

Every woman, regardless of age, should visit a gynecologist every six months, even in the absence of any problems and worries, because many gynecological diseases are not accompanied by painful symptoms, especially at the initial stage. Regular examinations by a gynecologist, as well as ultrasound of the pelvic organs, will help to recognize the problem in time if it occurs and take appropriate measures to eliminate it. Planned ultrasound examination of the pelvic organs for women should be carried out at least 1 time a year. When conducting such a study, the uterine body, endometrium, cervix, uterine space and bladder are usually studied. If necessary, a scan of the pelvic vessels, lymph nodes and an overview scan of the abdominal cavity and retroperitoneal space is performed.

For the first time, ultrasound of the pelvic organs can be performed on any day of the menstrual cycle, excluding menstruation days. It is optimal to conduct research in the I phase of the cycle (5-7 days from 1 day of menstruation). If the diagnosis is unclear or needs to be clarified, it will be necessary to re-conduct the study on a certain day appointed by the doctor. Ultrasound of the pelvic organs is performed using two complementary techniques - transabdominal -TA (external) and transvaginal -TV (internal) access. The study begins with an echography that allows you to determine the correct location of the pelvic organs, the size and structure of the identified pathological formations, if necessary, to assess the condition of the abdominal cavity and retroperitoneal space. The image quality during TA scanning is greatly influenced by the thickness of the anterior abdominal wall, intestinal peristalsis and the presence of adhesions. TV research is carried out by a special vaginal sensor, as close as possible to the studied organs. TV echography gives a better image, allows you to evaluate

small details. However, TV scanning does not provide an overview of the entire volume of the pelvis, which can lead to diagnostic errors: large or far-located formations do not fall into the field of view of the specialist conducting the study. It is the combination of TA and TV echography that makes it possible to most accurately assess the condition of the pelvic organs and identify existing pathology. Indications for gynecological ultrasound examination.

- Preventive examinations of the internal genitals to detect pathology;
- Pathology of the uterus: fibroids (fibromyoma) of the uterus, adenomyosis (endometriosis of the uterine body);
- Endometrial pathology: endometrial hyperplasia, polyps;
- Inflammatory diseases of the pelvic organs: hydrosalpinx, pyosalpinx, endometritis;
- Ovarian pathology: ovarian cysts and tumors, polycystic;
- Pelvic formations: tumors of the intestine, bladder, ovaries, uterus;
- Diagnosis of abnormalities of uterine development: saddle-shaped, two-horned uterus, uterus with vertical septum and others;
- Assessment of the location of the intrauterine device (IUD) in the uterine cavity;
- Ultrasound monitoring of ovulation;
- Diagnosis of pregnancy in the early stages and its complications: threatening miscarriage, detachment of the fetal egg, undeveloped pregnancy, bladder drift, ectopic pregnancy; diagnosis of multiple pregnancy;
- Diagnosis of complications after abortions, childbirth, diagnostic manipulations.

With the help of ultrasound, you can see and assess the condition of the uterus, cervix, ovaries, fallopian tubes (with their pathology) and the surrounding organs. During ultrasound, the sizes of all organs available for examination are measured, their structure and compliance with the phase of the menstrual cycle are evaluated.

In the presence of uterine fibroids, ultrasound is preferable to perform in the first phase of the menstrual cycle, immediately after the end of menstruation. This is especially true for control ultrasounds, which will need to be done 1-2 times a year. This is due to the fact that in the first phase, the size of the fibroid nodes is much smaller than in the second, when their edema is possible due to the specific action of the hormone progesterone. That is, if you do an ultrasound twice in one month, the sizes of the same nodes will differ significantly depending on the phase of the menstrual cycle. Moreover, the sizes of nodes in the first phase of the cycle will be considered true. Ultrasound helps to reliably estimate the number of nodes, their size, structure, location in relation to the walls of the uterus and the uterine cavity, which is very important for deciding on further treatment. With endometriosis, ultrasound can be used to diagnose the location of the uterine muscle (myometrium). This is the so-called internal endometriosis or adenomyosis. In this disease, unlike uterine fibroids, it is better to conduct a study in the second phase of the menstrual cycle, when the foci are "swollen", and they are better determined during ultrasound. Also, ultrasound can determine the presence of endometrioid ovarian cysts - they have a characteristic structure. With a different localization, foci of endometriosis are practically inaccessible for visualization using ultrasound. With inflammation of the uterine appendages (adnexitis, salpingoophoritis) Ultrasound can be done on any day of the menstrual cycle. However, if there is an expansion of the fallopian tubes (hydrosalpinx, sactosalpinx), the study should be repeated immediately after the end of menstruation to determine whether there is an additional injection of menstrual blood into the fallopian tubes. In case of inflammation of the uterine

mucosa (endometritis), it is important to assess the structure of the endometrium, so ultrasound should be done in both the first and second phases of the cycle.

The condition after abortion and other intrauterine interventions. It is mandatory to conduct an ultrasound immediately after the end of the next menstruation, as well as in the presence of additional indications or with the development of complications (bleeding, endometritis, suspicion of the remains of the fetal egg, etc.)

In case of ovarian dysfunction, ultrasound can help in clarifying the diagnosis, assessing the condition of the ovaries and endometrium. To do this, it is necessary to perform ultrasound at least twice during one menstrual cycle. This is especially important when evaluating the effectiveness of treatment, when it is necessary to track whether there is a growing follicle, whether ovulation has occurred and how the endometrium changes under the influence of hormones produced by the ovaries.

If, with endometrial hyperplasia during ultrasound, this diagnosis was suspected in the second phase of the cycle, it is necessary to re-examine immediately after the end of the next menstruation to see if there was an independent rejection of the thickened endometrium and/ or polyps, or if medical assistance is required.

It is possible to diagnose tumors and ovarian cysts with ultrasound performed immediately after the next menstruation. In the middle and in the second phase of the menstrual cycle, quite large (about 2 cm in diameter) additional inclusions are normally detected in the ovaries - a growing follicle or a yellow body, which, in the absence of a doctor's experience, can be mistaken for a tumor.

Suspicion of pregnancy is established when the next menstruation is delayed. With the help of ultrasound, you can reliably see the fetal egg in the uterine cavity for about 5-7 days of delay. If a woman is practically healthy, for preventive purposes, for the early detection of various gynecological diseases, it is necessary to do ultrasound of the pelvic organs once every 1-2 years, and after the age of 40 - once a year.

Preparation for transvaginal ultrasound of the pelvic organs - two days before the study, plant foods (fruits, vegetables, juices, legumes), carbonated drinks, meat and dairy products in large quantities should be excluded from the diet. The purpose of such a diet is to prevent gas formation in the intestine. Gas bubbles can seriously interfere with the study and lead to a diagnostic error. In the absence of a stool the day before, a cleansing enema should be done. The study is carried out with moderate filling of the bladder, so the last urination should be 1 - 1.5 hours before the study. A filled bladder is a reference point for determining the location of the internal genitalia.

Preparation for transabdominal ultrasound of the pelvic organs - two days before the study, plant foods (fruits, vegetables, juices, legumes), carbonated drinks, meat and dairy products in large quantities should be excluded from the diet. The purpose of such a diet - prevent gas formation in the intestine. Gas bubbles can seriously interfere with the study and lead to a diagnostic error. In the absence of a stool the day before, a cleansing enema should be done. The study is carried out with a full bladder. The filling of the bladder is indicated by a moderate desire to urinate.

Ultrasound during pregnancy is carried out in the first trimester (the first three months of pregnancy or up to 12 weeks), the study is carried out by the transvaginal method. In the second and third trimesters, the study is carried out by the transabdominal method. For women who have previously given birth by cesarean section, the study is carried out with a filled bladder, who have not given birth and who have given birth independently, filling the bladder is not essential. Echohysterosalpingoscopy (ECHGS) the study is carried out before the 10th day of the menstrual cycle (at 28 daily cycle). An outpatient procedure, used mainly to determine the patency of the fallopian tubes. Fluid is injected into the uterine cavity under low pressure. If the pipes are passable, the liquid passes freely through them and

enters the post-tent space. Based on this fact, a conclusion is made about the patency of the fallopian tubes. Ultrasound of the mammary glands - the study is carried out before the 5th day of the menstrual cycle and does not require special training.

The latest report of the World Health Organization reflects support for the opinion that ultrasound is harmless: "Diagnostic ultrasound examination of the fetus is recognized as a safe, effective and highly flexible way of obtaining an image, allowing to reveal clinically significant information about most parts of the body in a fast and cost-effective way."

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