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An abstract graphic consisting of a grid of thin, light blue lines that wave and curve across the page, creating a sense of motion and depth. The grid is denser in some areas and more sparse in others, with some lines overlapping to create a 3D effect. The background is a dark blue gradient.

**ADVANCED  
PERFORMANCE MATERIALS**

## ULTRASONIC EXAMINATION OF UTERINE MYOMA DURING PREGNANCY

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### RESUME

**Uterine fibroids (leiomyomas)** are one of the most common tumors of the female genital area. This disease is diagnosed in 20-27% of women of childbearing age. In recent decades, uterine myoma by the time of the implementation of the childbearing function is noted in an increasing number of cases, since due to social motives, women postpone the birth of children to a later period of reproductive age, which is confirmed by ultrasound. In this regard, it is quite logical that they increasingly have questions about the possibility of becoming pregnant in the presence of uterine fibroids or after its removal, about its impact on the course of pregnancy and childbirth.

Uterine fibroids in and of themselves are not a cause that prevents pregnancy and leads to infertility, but it can be quite difficult for women with this disease to conceive a child. It all depends on the number, location and size of the myomatous node. Myoma can compress the fallopian tubes; deform them, thereby disrupting the process of free movement of spermatozoa and, as a result, fertilization. Also, a myomatous node, if it is in close proximity to the implantation site, can disrupt its proper course and, as a result, lead to spontaneous miscarriages.

Small knots located in the muscular layer of the uterus practically do not affect the process of embryo implantation. As a rule, during such a pregnancy, complications do not occur.

### PURPOSE OF THE STUDY

**Fibroids Variability** uterus at different stages of pregnancy based on ultrasound.

**Based on the purpose of the study, the gynecologist chooses the most appropriate method:**

- Transabdominal (external). The specialist moves the ultrasound transducer across the patient's abdomen, determining the location and approximate size of the tumor;
- Transvaginal (internal). The sensor is inserted deep into the vagina, which allows you to study the structure of the tumor. The method is not suitable for women allergic to latex;

- Hysterography. Before an ultrasound, a contrast agent (usually saline) is injected into the uterine cavity, which helps to assess the degree of deformation of the organ.

With any method, myomatous nodes are defined as neoplasms of a round or oval shape, having a clear contour and a layered structure:

- an intramural node is formed in the muscle layer and creates a picture of a reduced density of the affected area;
- the submucosal node grows into the uterine cavity and looks like an oval formation on ultrasound;
- the subserous node changes the outer contour of the uterus.

Uterine fibroids is one of the most common gynecological pathologies, its incidence is 70 - 85%. Currently, uterine fibroids are increasingly being diagnosed at a younger age in women, leading an active sex life and planning a pregnancy.

In most women with uterine fibroids, the disease is asymptomatic and is detected at the first visit to the doctor about pregnancy by chance due to the high resolution of modern ultrasound equipment.

**So, uterine fibroids... What is it? How to relate to this and what to do about it if pregnancy has already begun**

**Uterine fibroids (leiomyoma, fibromyoma, fibroma)-** This is a benign proliferation of altered smooth muscle cells in the muscular layer of the uterus. It is established that the oncological degeneration of fibroids is not high (about 0.3%). Since pregnancy develops in the uterine cavity, and fibroids in the muscular layer of the uterus, there is no direct negative effect on each other.

There are a number of features of the course of pregnancy in the presence of fibroids. First of all, in the presence of uterine fibroids, the threat of abortion develops somewhat more often (in every 4-5 patients with uterine myoma), although spontaneous miscarriages are observed in 4-5%, which is no more than the population risk of miscarriage. This is due to some increased contractile activity of the uterus in the presence of fibroids. Therefore, such preventive measures as limiting stress and physical activity, sufficient sleep, herbal sedatives (valerian, motherwort), Magne-B6, vitamin E will not interfere in any case. An early first visit to the doctor will allow you to orient yourself in advance and be alert when symptoms of a threatened abortion appear, and, if necessary, start treatment.

Sometimes the threat of abortion is associated with the so-called. power failure in the nodes. The fact is that the nodes of fibroids are most often not very well supplied with blood. As pregnancy increases and the uterus stretches, a significant decrease in the amount of blood flowing to the node is possible. A focus of hypoxia occurs in the node, an inflammatory reaction develops, which is accompanied by significant pain sensations, an increase in the tone of the uterus. This requires a quick diagnosis. Most often, timely treatment can overcome the difficulties that have arisen. In rare severe cases, urgent surgical attention may be required.

When the fibroid nodes are located closer to the uterine cavity (the so-called submucosal location of the node) and the fetal egg is attached in close proximity to

the node or directly above it, the frequency of spontaneous miscarriages, including missed pregnancies, increases. This is due to the fact that in the area of the nodes it is often impossible to properly form the placenta. Inadequate attachment of the placenta leads to malnutrition of the fetus, its partial detachment is possible and, as a result, the development of pregnancy stops.

Childbirth on the background of uterine fibroids can sometimes also occur with deviations from the norm. Large fibroid nodules located near the cervix may be a mechanical obstacle to the fetus being born. In such cases, there is a need for a caesarean section. It should be noted that during such operations in highly qualified obstetric and gynecological institutions, parallel removal of nodes is possible. In the natural course of events in childbirth, women with uterine myoma often experience disorganized labor activity, weakness, which requires careful individual monitoring during childbirth and timely resolution of the issue of caesarean section in case of deviation from the normal course of childbirth. In the third stage of labor (when the child's place is separated and born), incomplete separation of the placenta is somewhat more common, decrease in uterine contractility. These complications are fraught with increased blood loss and usually the doctor purposefully carries out a set of preventive measures.

In the postpartum period, there is often a slow regression of the uterus, especially with a large number of nodes. More often, the appointment of reducing agents, physiotherapy is required.

All of the listed complications in the presence of uterine fibroids are not always, but the doctor, observing the course of pregnancy in a woman with uterine fibroids, always thinks about them. In this regard, additional ultrasound studies are carried out during pregnancy, which allow assessing the development of the fetus, monitoring the size of the nodes. At the slightest suspicion of impaired functioning of the placenta (placental insufficiency), when the first signs of malnutrition appear in the nodes, preventive metabolic therapy is prescribed to prevent severe complications.

## **MATERIALS AND METHODS OF EXAMINATION**

Uterine fibroids occur in interstitial, subserous and submucosal variants [1,2]. In 408 pregnant women with uterine fibroids, a total of 1318 ultrasound examinations were performed. In 55.88% of patients, the fibroid diameter was 3-5 cm, in 37.01% - 6-10 cm, in 7.11% - more than 10 cm. In 71.57% of patients, the fibroids were localized in the body of the uterus.

### **Types of interstitial fibroids**

An interstitial myomatous node growing towards the uterine cavity is called an interstitial myomatous node with centripetal growth; deforming the uterine cavity - interstitial-submucosal fibroids. An interstitial myomatous node growing towards the abdominal cavity, protruding outward, is called interstitial-subserous. Myoma can be single, although many myoma nodes are most often diagnosed.

**Interstitial nodes** -the most common type of fibroids, they account for up to 50-60% of all detected myomatous nodes. In most cases, the process is localized in the body of the uterus, and only 5% of patients have cervical fibroids. For the most part,

the disease is detected in women of reproductive age, most often 30-45-year-old patients turn to the doctor.

### **THE REASONS**

In the smooth muscle fibers of fibroids, compared with the cells of normal myometrium, there are a large number of receptors for progesterone and estradiol. The current understanding of the development of fibroids is based on the hormonal theory, with hormonal imbalance, morphological restructuring of the myometrium occurs, which can increase both due to hyperplasia of smooth muscle cells and hypertrophy.

In addition to the hormonal aspect, there is a version about the occurrence of the disease against the background of a change in the body's immune reactivity, due to existing chronic foci of infection, since the node often forms around an inflammatory or endometrioid focus. There is also a version of the hereditary predisposition of patients to the disease.

Unfavorable factors that can provoke the appearance of fibroids are frequent injuries (abortions, curettage, etc.), obesity, late reproductive age, smoking, taking COCs, and inflammatory processes.

### **SURVEY RESULTS**

Intramural myoma was detected in 68.87%, subserous - in 18.38%, submucosal - in 12.74% of cases. 9.46% of women had an abortion, 24.92% had a threatened abortion, 12.96% had preterm birth, and 18.87% had a threat of preterm birth. Of the 33 patients with abortion, in whom the localization of fibroids was studied, an intramural node was detected in 25, subserous - in 5, submucous - in 3. 14, more than 10 cm - in 3 women.

Subserous nodes of fibroids can be single or multiple. Single nodes are enclosed in a special capsule consisting of muscle fibers, and multiple nodes can be located intramurally, that is, in the thickness of the muscle layer. The size can range from a few millimeters to several centimeters. It is also called interstitial subserous uterine fibroids.

The tumor can have both a wide base, attached to the muscular wall, and a thin stalk. In some cases, it is freely located in the abdominal cavity or localized in the ligaments of the uterus. The growth rate depends on whether it is simple or proliferating (that is, capable of increasing in size).

### **Reasons for the formation of subserous uterine fibroids**

#### **Risk factors include:**

- hormonal imbalance,
- chronic infectious diseases,
- diseases of the thyroid gland and adrenal glands,
- obesity,
- stress,
- heredity.

If your mother and grandmother had fibroids, you are at increased risk.

Termination of pregnancy, lack of childbirth and breastfeeding, chronic diseases of

the female genital area and long-term use of oral contraceptives can also cause the development of the disease.

#### Subserous uterine fibroids and pregnancy

In most cases, this problem does not prevent pregnancy and childbirth. However, tumors that are large and thin-stalked (which increases the risk of torsion) can still lead to complications. In addition, it disrupts the hormonal background, which affects the muscles of the uterus and can contribute to miscarriages and premature births. Pregnancy in a woman with fibroids requires increased attention from doctors.

#### CONCLUSIONS

Thus, the statistical analysis did not reveal any dependence of the abortion rate on the size of the fibroids, its localization; the frequency of threatened abortion increased with an increase in the size of the fibroids. Premature birth and the threat of preterm birth were more common with submucosal myoma and tumor localization in the isthmus of the uterus.

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