

# Physiological trimesters

The physiological postpartum period is the period that begins after childbirth and lasts for six weeks . At this time, the woman's body returns to the state it was in before pregnancy. The sextet can be divided into two parts:

- **early puerperium** - the first seven days after birth
- **late menopause** - the remaining 35 days, when a woman's body changes back to its pre-pregnancy form.

## Anatomical and physiological changes in puerperium

### Changes in the uterus

**Three basic events** are involved in the change of the uterus in the form of shrinking :

1. **Retraction** - shortening of the distanced elastic fibers ⇒ separation of the placenta ,
2. **Contraction** - active contraction of the myometrium ⇒ formation of retroplacental hematoma, by administering oxytocin also shortening the time between retraction and contraction ⇒ closing of vessels and reduction of blood loss,
3. **Involution** - a gradual process of wrinkling and shrinking of muscle fibers, the number does not change, only elastin and connective tissue between them increases.

We check the contraction and involution of the uterus by palpating the uterine fundus, thanks to which we can find out how the uterus wraps . Swaddling is slower in multiple pregnancies and multiparous.

### Cervix

From the flabby and thinned throat after childbirth, after two weeks it reaches the same length, it is firmer and the goal yawns. At **the end of the sixth trimester** , the throat is already completely **closed** and **the external gate has the shape of a transverse slit** .

### Lochia

After childbirth, a secretion is excreted, which changes its color and composition several times over time. It is a mixture of morning secretion, decidua, coagulation, tissue fluid and cervical, vaginal and vulva secretions. They have **an alkaline pH** environment, therefore they are **more susceptible to infections** .

Lochia, or purging, is divided into:

1. **Lochia rubra** - red, the blood component predominates, in the first days of menstruation,
2. **Lochia fusca** - brownish,
3. **Lochia flava** - yellowish, with a predominance of white blood cells,
4. **Lochia alba** - whitish,
5. **Lochia mucosa** - mucous.

### Changes in fallopian tubes and ovaries

The fallopian tubes shrink , stop being soaked and return **back to the small pelvis** . The ovaries also shrink and return to the small pelvis.

### Changes in the vagina, vulva and pelvic floor

#### Vagina and vulva

Within three weeks, it is relatively in the same shape as before pregnancy, only it is less flexible, its mucous membranes are smoothed, the walls of the vagina decrease and the vulva opens. The hymen breaks after the first birth and the carunculae hymenales turn into carunculae myrtiformes. Congestion of the external genitalia decreases and pigmentation disappears.

#### Pelvic floor muscles

Tone is gradually gained, and diaphragma pelvis and urogenitale return to their original position.

#### Abdominal wall changes

Muscle elasticity and tone return to normal after 6 to 7 weeks.

#### Skin changes

The pigmentation of the external birthmarks, the linea fusca, is slowly **disappearing** . **Scars** , otherwise known as **striae**, caused by stretching the skin, take on a rather grayish color from red .

## Changes in the uropoietic tract

After childbirth, leukocytes and erythrocytes can remain in the urine, during the sixth trimester everything changes to normal values. Due to the effect of progesterone during pregnancy , **hypotonia and dilatation of the ureters and renal pelvis** occurs after childbirth , which is why the woman has **a higher risk of infection** . Clearance and glycosuria return to normal approximately one week after delivery.

## Changes in the gastrointestinal tract

The intestinal loops return to their original position after birth, but there may still be **problems with emptying due to reduced peristalsis** , which returns to its original state during the postpartum period. The hyperacidity of the gastric juice is adjusted.

## Changes in metabolism

The most substances that a woman loses after childbirth are water, chlorides and atrium, and the plasma values of cations and anions also return to normal. Serum protein and amino acid levels decrease. After the end of pregnancy, cholesterol and triacylglycerols also return to normal values. Glycemia decreases on the third day after birth, as does alkaline phosphatase. However, there are substances that are increased after childbirth due to muscle activity, i.e. creatine phosphatase and lactate dehydrogenase .

## Cardiovascular and respiratory changes

After childbirth, **the diaphragm drops** , the heart returns to its **original position** . Cardiac output gradually decreases, systolic volume decreases and myocardial contractility also decreases . The lungs expand and the number of breaths and pulses decreases.

## Hematological changes

**The total volume of blood decreases after childbirth** , but of course both the volume and the value of erythrocytes or hematocrit are affected by blood loss during childbirth. Right after delivery, the leukocyte count rises slightly. The iron level is subject to a decrease first and increases again from the fifth day. Haemocoagulation factors are mainly subject to a decrease first, and after 3-5 days they increase again, i.e. mainly the number of platelets and fibrinogen.

## Hormonal changes

There is **a decrease in placental hormones** - placental lactogen disappears within a few hours, hCG decreases to zero about 14 days after delivery. By the seventh day after childbirth, the level of estrogen and progesterone, which are activated mainly by breastfeeding, decreases . In the same way, the level of prolactin increases with breastfeeding. FSH and LH have a low value and the follicular phase does not reach until the third week after childbirth, so in lactating women, ovulation can only occur after the end of the six-month period.

## Lactation

During pregnancy, the milk ducts proliferate due to estrogen and the epithelium of the alveoli is stimulated due to progesterone. In order for everything to work properly during breastfeeding, it is necessary for **the lactogenic hormonal apparatus** to work properly - i.e. the hormones estrogen, progesterone, placental lactogen, pituitary gland, cortisol and insulin. Breastfeeding stimulates the peripheral nerve stimulation of the nipple, which then increases the output of prolactin and, together with the neurohypophysis, the output of oxytocin gradually increases. Oxytocin then stimulates the ejection of milk from the alveoli and milk ducts.

## Types of breast milk

### Colostrum

**In the first days after childbirth** (often also during pregnancy), a thick liquid is excreted on the surface of the nipple. This is the so-called **colostrum = colostrum** . It contains more proteins and minerals - thanks to this, the newborn has higher peristalsis and thus the first stool is eliminated faster = pitch. Colostrum also contains less fat and sugar. We also find antibodies in the form of immunoglobulin A.

### Mother's milk

After about **a week**, colostrum changes **to breast milk** . Breast milk is the most perfect food with the optimal temperature for newborns. It contains significant amounts of protein, lactose, water, fat, protein and vitamins. Its individual composition changes during the day according to the needs of the newborn. We can also find antibodies in the form of immunoglobulin A, as was the case in colostrum, which works against Escherichia coli , which is why breast-fed babies have a lower incidence of intestinal infections.

Breastfeeding is also **affected by the correct breastfeeding technique** - i.e. a breastfed child should have in his mouth, in addition to the nipple, also the areola from which the milk ducts emerge. Otherwise, painful sore throats could occur and these can then cause the entry of bacteria and the emergence of various inflammations, e.g. puerperal mastitis .

A lactating woman should eat food rich in proteins, minerals and vitamins, it should not be irritating or too acidic or flatulent. Nicotine and alcohol enter the milk, so a woman who is breastfeeding should avoid these habits.

In addition to the irreplaceable connection of the child with the mother during breastfeeding, **breastfeeding provides a woman with a reduction in the risk of breast cancer** .

## Contraception after childbirth

Contraception after childbirth can be divided into **hormonal and non-hormonal** .

### Non-hormonal contraception

Non-hormonal represents **natural postpartum contraception** . This contraceptive uses lactational hyperprolactinemia and it is necessary for the woman to breastfeed regularly. Unfortunately, it is not 100%, and it may happen that a woman gets pregnant even if she follows it.

Other forms of non-hormonal contraception include **barrier contraception and spermicides** .

### Hormonal anticonception

The most suitable form of hormonal contraception are **gestagen oral preparations** , where either desogestrel tablets or subcutaneous etonogestrel are administered. These substances do not affect the production or composition of breast milk.

In addition to progestogen preparations, another option is **an intrauterine device** . However, the body must be inserted either immediately after delivery of the placenta, caesarean section or within 48 hours after delivery. If this is not done, it is more appropriate to introduce the body 4 to 6 weeks after childbirth, when the technique is already the same as at any other time in fertile life.

## Exercise in pregnancy

It is precisely the exercise that helps the body to get back to its pre-pregnancy state more quickly during pregnancy. It helps strengthen the abdominal wall, pelvic floor, strengthens the pectoral muscles and improves the function of all organs. It also works as a prevention of thromboembolic complications or problems with emptying urine and stool. Improves intestinal peristalsis.

Exercise should be **gradual, not vigorous** . It is best for a woman to contact a rehabilitation worker or physiotherapist so that she does not unnecessarily injure herself with some exercises.

## Control examination after six months

During the postpartum period, the obstetrician in which she gave birth **is responsible for the woman , after 6 weeks**, the woman is taken care of by her **district gynecologist** , who will also perform a control examination after the postpartum period. It checks the woman's general state of health, breastfeeding, urination, defecation, healing of the birth injury, both in mirrors and by palpation. A cytological sampling from the cervix and a colposcopic examination are also taking place.

Part of the examination is also possible resolution of pathological findings, i.e. bowel and defecation disorders, uterine involution disorders, heavier bleeding, poorly healed birth injuries, presence of hemorrhoids, hypertension, etc.

## Links

### related articles

- Pregnancy
- Birth
- Pathological pregnancy

### References

- HÁJEK, Zdeněk, Evžen ČECH and Karel, and the team. MARSHAL. *Obstetrics*. 3. revised and supplemented edition of the edition. Prague. 2014. 576 pp. ISBN 978-80-247-4529-9 .

