CERVICAL MUCUS DEFECT

Condition causing cervical mucus too thick and hostile to allow the sperm to penetrate the cervix.

Diagnosis  Female

About Cervical mucus defect

Cervical mucus defect is a slight modification in cervical mucus and may rapidly transform the cervix into a “hostile” environment, which, together with changes in vaginal environment and cervix structure, may prevent natural conception and be a cause of infertility.

Several hundred glands in the endocervix produce 20–60 mg of cervical mucus a day, increasing to 600 mg around the time of ovulation. It is viscous as it contains large proteins known as mucins. The viscosity and water content varies during the menstrual cycle; mucus is composed of around 93% water, reaching 98% at midcycle. These changes allow it to function either as a barrier or a transport medium to spermatozoa. It contains electrolytes such as calcium, sodium, and potassium; organic components such as glucose, amino acids, and soluble proteins; trace elements including zinc, copper, iron, manganese, and selenium; free fatty acids; enzymes such as amylase; and prostaglandins. Its consistency is determined by the influence of the hormones estrogen and progesterone. At midcycle around the time of ovulation — a period of high estrogen levels — the mucus is thin and serous to allow sperm to enter the uterus, and is more alkaline and hence more hospitable to sperm. It is also higher in electrolytes, which results in the “ferning” pattern that can be observed in drying mucus under low magnification; as the mucus dries, the salts crystallize, resembling the leaves of a fern. The mucus has stretchy character described as Spinnbarkeit most prominent around the time of ovulation.

At other times in the cycle, the mucus is thick and more acidic due to the effects of progesterone. This “infertile” mucus acts as a barrier to sperm from entering the uterus. Women taking an oral contraceptive pill also have thick mucus from the effects of progesterone. Thick mucus also prevents pathogens from interfering with a nascent pregnancy.

A cervical mucus plug, called the operculum, forms inside the cervical canal during pregnancy. This provides a protective seal for the uterus against the entry of pathogens and against leakage of uterine fluids. The mucus plug is also known to have antibacterial properties. This plug is released as the cervix dilates, either during the first stage of childbirth or shortly before. It is visible as a blood-tinged mucous discharge.

Associated diseases

- infertility

Complications

Local inflammation causes changes in cervical mucus that can affect sperm and their exit, managing to infertility.

Risk factors

- an infection in the lower reproductive tract
- a poor, acidic diet
- cervical mucous that is too thick or scanty
Impact on fertility

The cervical mucus is a jelly-like substance produced by minute glands in the cervical canal. It changes in consistency and composition with the menstrual cycle. Just before ovulation and under the effect of the hormone estrogen it becomes very watery and copious to allow the sperm to swim through it. After ovulation and under the effect of progesterone, the mucus becomes thick and sticky, which render it impenetrable to the sperm. Once the sperm are in the mucus, they can stay there for a few days. Thus the mucus acts as a sperm reservoir.

Cervical mucus hostility is the inability of sperm to penetrate the cervical mucus. The significance of cervical mucus hostility is disputable among infertility specialists. Problems with cervical mucus usually cause no symptoms.

The mucus is too sticky and thick (and there is not enough of it to allow sperm to swim through). This may be due to poor estrogen stimulation of the cervical glands (e.g. wrong timing of the test or lack of ovulation) or poor functioning cervical glands due to infection or damage caused by surgery, as may occur after cone biopsy.

Prevention

The postcoital test (PCT) (also known as Sims test, Huhner test or Sims-Huhner test) is a test in the evaluation of infertility. The test examines interaction between sperm and mucus of the cervix. The PCT is scheduled close to ovulation when mucus is abundant, and the infertile couple is asked to have sexual intercourse, preferably in early hours of morning. Several hours later (usually 2), the woman is examined by the physician. The mucus is aspirated from cervical canal and spread on a glass slide. Smear from posterior fornix is used as control. 10-50 motile sperms per high power field are considered normal. Rotatory or shaky motion of sperms indicates presence of antispermal antibody. Cervical mucus is examined for quality, viscosity and fern test.

Symptoms

Scant, thick, sticky cervical mucus even during ovulation but problems with cervical mucus usually cause no symptoms.

Therapies

Self therapy

Sometimes, simply changing your diet or growing your water intake may help to improve your cervical mucus.

Conventional medicine

Pharmacotherapy

Non-existing.

Surgical therapy

Non-existing.

Other therapies

Estrogen therapy to stimulate production of mucus that aids the sperm in reaching the egg.
Assisted reproduction

Treatment of cervical mucus defect may include placing semen directly in the uterus to bypass the mucus (IUI) and treating any infections that are identified. Pregnancy rate after IUI differ between studies according to patient selection criteria, the presence of various infertility factors, ovarian stimulation methods, number of cycles performed, different sperm parameters and preparation technique.

If IUI doesn’t work, the next stage is to use ICSI (intracytoplasmic sperm injection) and then the best quality embryos are selected and transferred to the woman’s womb.

Find more about related issues

Heart Organs

Cervix
The narrow inferior portion of the uterus that projects into the vagina.
Learn more at: www.fertilitypedia.org/edu/organs/cervix

Biological control

Estrogen
The primary female sex hormone responsible for the development and regulation of the female reproductive system and secondary sex characteristics.
Learn more at: www.fertilitypedia.org/edu/biological-control/estrogen

Progesterone
Steroid hormone, secreted by the ovaries, whose function is to prepare the uterus for the implantation of a fertilized ovum and to maintain pregnancy.
Learn more at: www.fertilitypedia.org/edu/biological-control/progesterone

Reproductive functions

Fertilization
The fusion of an ovum with a sperm to initiate the development of a new individual organism.
Learn more at: www.fertilitypedia.org/edu/reproductive-functions/fertilization

Risk factors

Poor dietary habits
Eating habits are one of the few factors within our control that impact not only our chances of falling pregnant.
Learn more at: www.fertilitypedia.org/therapy/rf/poor-dietary-habits

Symptoms

Infertility
The failure to achieve a clinical pregnancy after 12 months or more of regular unprotected sexual intercourse.
Learn more at: www.fertilitypedia.org/edu/symptoms/infertility

Therapies
ICI
A micromanipulative fertilization technique in which a single sperm is injected directly into an egg. Learn more at: www.fertilitypedia.org/edu/therapies/icsi

Intrauterine insemination
A process of injecting washed sperm into the uterus with a catheter for treatment of infertility. Learn more at: www.fertilitypedia.org/edu/therapies/intrauterine-insemination

Standard IVF
A process in which an egg is fertilised by sperm outside the body: in vitro. Own or donated gametes may be used. Learn more at: www.fertilitypedia.org/edu/therapies/standard-ivf

Gallery

Fertile Cervical Mucus
Fertile cervical mucus promotes sperm life by decreasing the acidity of the vagina, and also helps guide sperm through the cervix and into the uterus.

Sources
“Cervix (https://en.wikipedia.org/wiki/Cervix#Cervical_mucus)” —sourced from Wikipedia licensed under CC BY-SA 3.0

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