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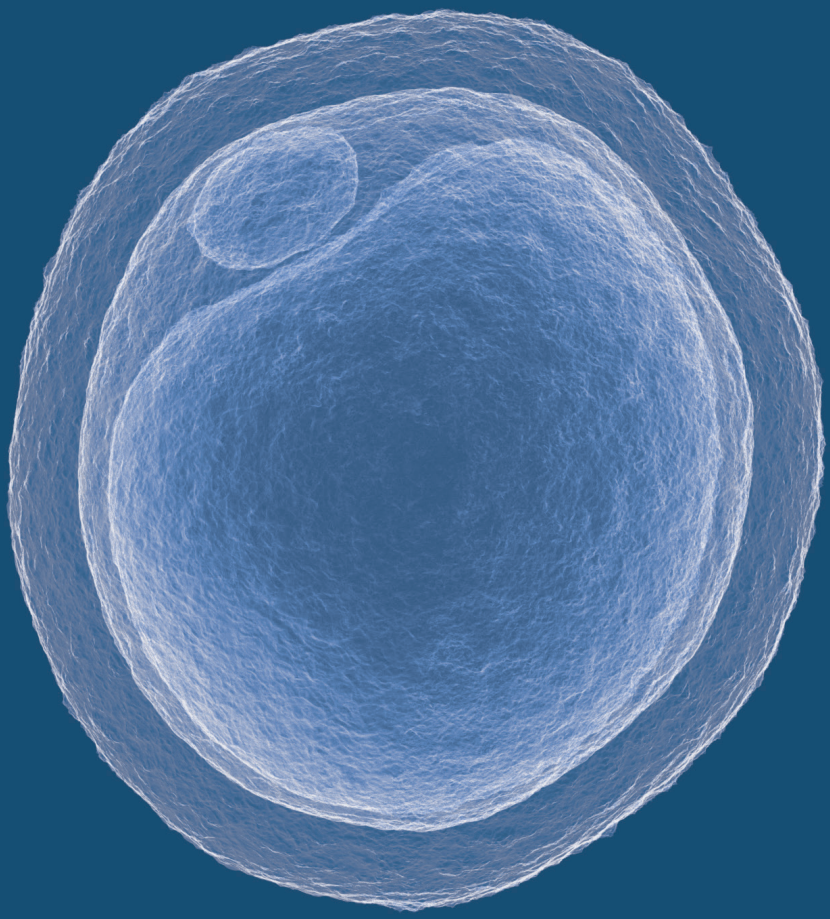


Freezing your eggs?

Information about the procedure of retrieving and freezing eggs or a section of an ovary.

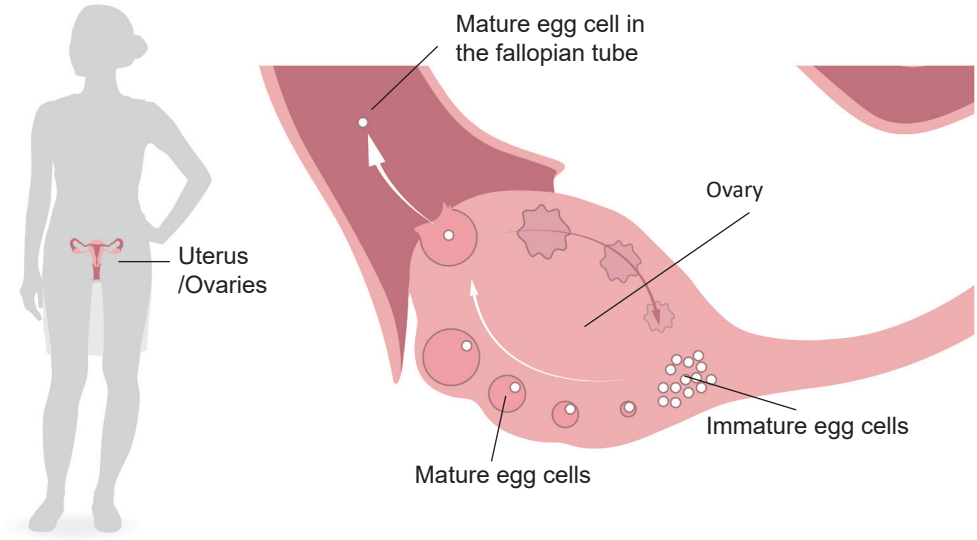
Good to know.

This information is for younger people who, due to cancer treatment, may want to save their eggs by freezing them. There are only certain cancer treatments that risk harming the egg cells, hence this information does not apply to all young people receiving cancer treatment.

Background

In treating cancer, very strong medication is used, such as chemotherapy and radiotherapy. The treatment is very efficient in destroying the harmful cancer cells and is necessary for making a recovery but unfortunately the healthy cells in the body may also be damaged by the treatment. Exactly which healthy cells that risk being harmed depends on the treatment. In nearly all cases, the body can replace and mend the cells that have been damaged by the treatment but egg cells is one example of cells that the body is unable to restore or multiply.

In some cases it is possible to take out the egg cells before the cancer treatment is started and freeze them to save them. The eggs can then be fertilised and put back in the future.



Enlarged image of one ovary and the location of the egg cells during the different stages of maturity.

Where are my eggs?

The egg cells are in the ovaries in the lower part of the abdomen. There are two ovaries, one to each side of the uterus. All egg cells that will mature during a person's lifetime are already there from birth. However, the egg cells are not completed but lie dormant in an immature stage until puberty. The hormone changes that occur in puberty cause one egg cell per month to mature and be released from the ovary to the fallopian tubes that lead into the uterus. It is only the fully matured egg cells that are ready to be fertilised. The other egg cells remain in their immature stage in the ovaries. Menstruation, when it is regular, indicates that a mature egg has been released during the month and that the body functions normally.

Risk of damage to the ovaries

When treating cancer there is a risk of damage to other cells in the body as well. In almost all cases the body can repair or create new cells which means that the damage can heal by itself. But the body cannot repair or create new egg cells. This means that if egg cells are damaged by the treatment you may not be able to have a child in the future. The likelihood of that risk depends on the treatment.

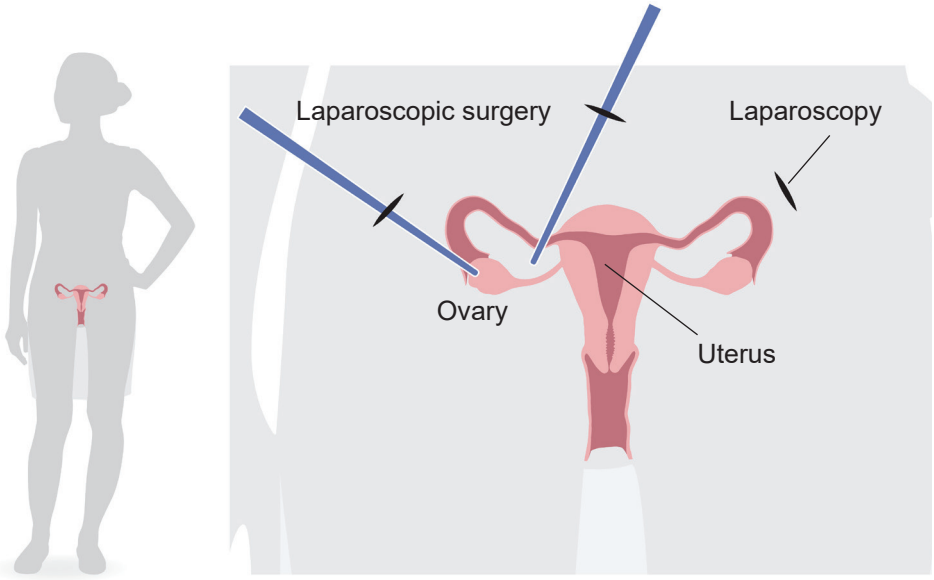
Fortunately it is now possible to freeze the egg cells. When frozen the egg cells can be stored for many years and subsequently thawed and used in the future.

How can I keep my egg cells for the future?

There are two different ways of retrieving egg cells from the ovaries and what method suits you depends primarily on your age. It starts with you receiving a referral from your doctor to a reproductive medicine unit. where specialists in this area will help you with the freezing of the egg cells.

Method 1: Ovary or ovarian tissue

A ovarian biopsy means that the surgeon not only retrieves individual cells but a larger piece of tissue that contains immature egg cells. This is done through what is called laparoscopic surgery, where only small incisions are necessary for the surgery. The tissue, or in some cases the entire ovary, is taken out and frozen. The ovarian tissue can then be put back in the future.



When is biopsy applicable?

Biopsy from the ovary is applicable from mid-puberty and onward. Puberty begins with breast development and about 1–1½ years later menstruation usually starts. Puberty finishes when the growth spurt ends, which usually occurs about a year after the first menstruation.

How does the process work?

You will be anaesthetized before the procedure. There will be three small scars (approx. 1–2 cm) on your abdomen from the laparoscopy, one in the bellybutton and a couple lower down.

Advantages of biopsy

A biopsy can be performed on short notice and only takes a few days to plan and carry out. A biopsy is suitable if, for example, the cancer treatment must be initiated as soon as possible. The method works well and it is possible to keep the tissue in the freezer for many years. Since the eggs cells taken out are immature, it is not necessary for the egg maturation and menstruation to have started yet.

Disadvantages of biopsy

If there is a risk of cancer cells in the tissue retrieved, the method will not work. The reason is that the tissue cannot be put back without risking that the cancer cells are brought along. However, that risk only applies to certain types of cancer and research is underway to find a solution to the problem.

As opposed to the other method of retrieving egg cells, this method requires another surgery to put the tissue back in.

The technique is still relatively new and there are currently only a few examples of successful pregnancies from biopsies made on adults. Experiences from teenagers are still nonexistent. However, it can be presupposed that the research conducted today will lead to better techniques for restoring the tissue.

Biopsies on very young individuals long before puberty is not recommended as the research on such young tissue has not yet got that far.

Method 2: Retrieving mature eggs

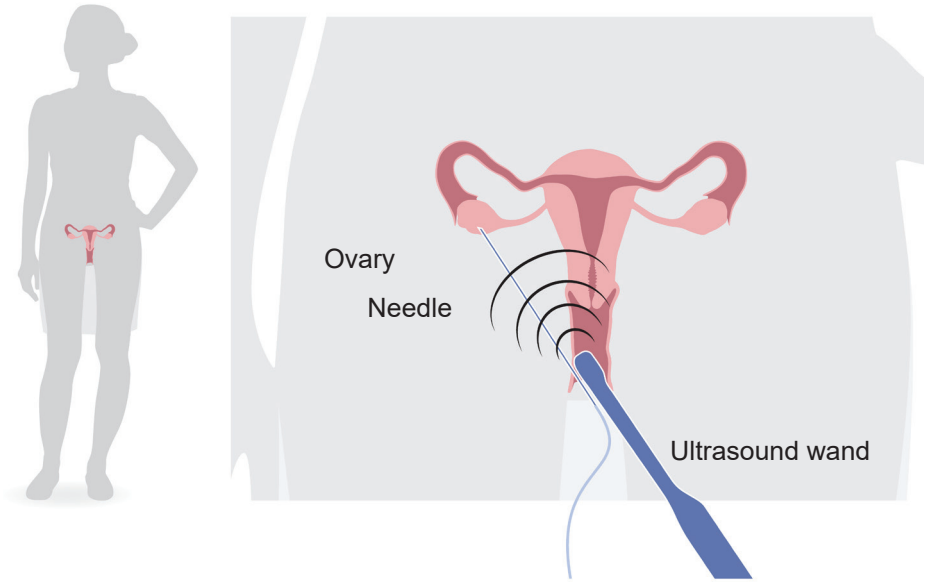
Unlike the biopsy method, this method is used to retrieve a smaller number of egg cells but in a more mature stage, and no other tissue is taken out.

Normally only one cell at a time will mature in the ovaries but with hormone treatment, several egg cells can mature at the same time.

Who can use this method?

Since the method means that mature egg cells are taken out, the egg maturation and menstruation must have started.

As opposed to the biopsy method, this method takes approximately 2–3 weeks and is therefore suitable in the cases where treatment does not need to be started immediately.



How does the process work?

Like with the biopsy method you will first get a referral from your doctor to a reproductive medicine unit where the egg cells will be retrieved.

It starts with you receiving the hormones needed for several egg cells to mature at the same time. These hormones are introduced by daily injections for about two weeks. At follow-up visits after the injections it is possible to monitor the development of the egg cells in the ovaries with the help of ultrasound. When the doctor assesses that a maximum amount of eggs have matured, they can be suctioned out with a thin needle and subsequently frozen. The examination and removal of the eggs is done vaginally and will take place at the reproductive medicine unit that you have been referred to by your doctor.

The procedure does not require general anaesthesia, only a local anaesthetic. The instruments used are so thin that the procedure is possible even for those with no sexual experience. If you feel that lying in a gynaecological examination chair is discomfortable, you can bring an adult with you for support, for example a parent or older sibling who perhaps have experience of gynaecological examinations.

Advantages of method 2

The method is tried and tested and there are good chances that the eggs, after thawing, can be used for in vitro fertilisation (IVF). There are many children, in many countries, that have been born from thawed eggs and IVF.

The removed egg cells can survive being frozen for a very long time. No surrounding tissue is frozen and there is therefore no risk reintroducing any cancer cells.

Disadvantages of method 2

The method takes a number of weeks to allow time to stimulate the maturation of the egg cells. This time is not always available if cancer treatment needs start as soon as possible.

Only the mature egg cells can be frozen, unlike in the biopsy method where many or all of the egg cells are frozen. There is always the risk that some egg cells will not survive the freezing or thawing process. This means that the number of egg cells that can be used for IVF in the future is limited.

The gynaecological method of retrieving the eggs can feel unpleasant, especially for young people.

If the freezing of egg cells has not been completed before cancer treatment commences, it is possible to do it after the treatment?

In certain cases it may be possible. There have been cases where ovarian function returns a few years after the treatment. In the follow-up after the cancer treatment, blood samples can be taken and analysed. If there are positive signs of ovarian activity, your doctor can contact the reproductive medicine unit. In some cases, extra testing or hormone treatments may be required. The most common method in these cases is the one where egg cells are allowed to mature before being retrieved.

Those who have had egg cells frozen can return to the reproduction clinic where they are kept and use these. Once you decide to try to become pregnant, the eggs will be thawed and processed in the same way as with regular IVF treatment, with the hope that the fertilised egg can be implanted in the uterus and result in pregnancy.

Alternative ways to build a family

Even those who have not undergone cancer treatment can suffer from childlessness. An estimated 15% are involuntarily childless. The reproductive medicine clinic can help with information on the options available in these cases. It may, for example, be suitable to pursue egg or sperm donation.

If there are medical factors preventing pregnancy, adoption is also an alternative. There are several international adoption agencies to turn to.

Would you like more information?

There is a short film aimed at young people who are saving their eggs. This can be found at **www.vavnad.se** under the heading **Könsceller.**

At **www.1177.se** you can find information on cancer, on fertility during cancer treatment and on treatments in the event of involuntary childlessness.

Notes

The brochure is produced by the Vävnadsrådet working group UNGA Vävnadsrådet. The Swedish national council for organs, tissues, cells and blood is an advisory forum within the Swedish Association of Local Authorities and Regions (SALAR) and works with national coordination and uniform procedures within the area.