Reproductive Facts

Patient fact sheet developed by the
American Society for Reproductive Medicine

Female cancer, cryopreservation, and fertility

Are there options for preserving fertility in women who have been newly diagnosed with cancer?

Yes! Current technology lets your doctor remove and freeze eggs or ovarian tissue before treating your cancer. Eggs, once removed, can be frozen or fertilized prior to freezing. This way, you may be able to have children after your treatment.

This process is called cryopreservation or freezing. The kind of cancer you have determines your options. A fertility specialist should counsel patients considering these therapies.

The most common cancers in girls and young women are Hodgkin or non-Hodgkin lymphoma, leukemia, thyroid cancer, breast cancer, melanoma, or gynecologic cancers (cervix, uterus, or ovary). Most of these cancers can be treated with chemotherapy, radiation, or a combination of both. Several factors, such as your age, the dose and location of radiation, and the type of chemotherapy you receive, determine if you are at risk of becoming infertile after treatment. Chemotherapy is effective in treating many cancers, but it can cause infertility by harming or decreasing the number of eggs a woman has.

Embryo cryopreservation

Embryo cryopreservation is the most common way of preserving your ability to get pregnant in the future. You must undergo a procedure called in vitro fertilization (IVF). In IVF, you will be given hormones to stimulate the ovaries to produce a number of eggs. Once they are developed, the eggs will be removed by gentle suction. Embryos are created in the laboratory by joining together the sperm and the egg. The fertilized eggs or embryos are then frozen. You may even choose to perform genetic testing on the embryos prior to freezing them (called PGT or Pre-Implantation Genetic Testing). PGT may be used to test for a specific genetic disorder (for instance, to check for BRCA gene in a woman with breast cancer). If you decide you want to have children after your cancer treatment is completed, one or two embryos can be placed in your uterus (womb) with or without the help of medications.

Not everyone can have this procedure, so you must work with your doctor to determine if it's right for you. You may have to take medications that make you produce more eggs than usual. In total, the process may take two to three weeks to complete. Unfortunately, if you need chemotherapy or radiation treatment for your cancer, you may not be able to wait that long. The medications that make your body produce more eggs may also make your body produce more hormones, such as estrogen. Estrogen can make some cancers worse. Discuss this with your fertility specialist, as there are medications to lessen this risk.

Embryo cryopreservation offers the best chance of pregnancy for women undergoing cancer treatments. The odds of an embryo surviving the freezing and thawing process and implanting in your uterus are still higher than the odds of creating a pregnancy from embryos using frozen eggs or frozen ovarian tissue (egg cryopreservation). If you decide to use embryo cryopreservation, you will need to have a man's sperm to fertilize your egg before it is frozen.

If you do not have a partner, donor sperm can be used. If neither of these sperm sources is possible or available to you, then egg freezing is a good option.

Egg (oocyte) cryopreservation

Women may choose this option over embryo cryopreservation if they have no current male partner or for personal/religious reasons. Procedures for freezing eggs have improved greatly over the past 15 years, making this a good option for many women. This process still requires

two to three weeks. You will need to take medications that will help you grow many eggs. However, after eggs are removed from your body, they are frozen immediately. Unlike embryo cryopreservation, the eggs are not fertilized before they are frozen.

After cancer treatment, eggs that survive the freeze-thaw process will be fertilized in the laboratory with your partner's or donor sperm. Embryos that develop will be placed in your uterus.

The efficacy of freezing more mature (developed) eggs compared to less developed (immature) eggs remains uncertain. Additionally, it has been noted that gentle suction of immature eggs, without the use of stimulation medications, has been performed, and some pregnancies have been reported.

Ovarian tissue cryopreservation

A more recent option is a procedure to freeze the tissue that contains resting eggs from the ovary. In this procedure, doctors cut the tissue from one of your ovaries into thin slices. These slices are then frozen. After your cancer treatment, the doctors can place a slice of thawed ovarian tissue back into your body. You may need to be treated with fertility hormones for this tissue to produce an egg. In addition to the surgical procedure to remove the tissue, there are some additional disadvantages to this procedure. You may have to have surgery several times to replace tissue. It also is dangerous if you have cancer of the ovary or a cancer that can spread to the ovary. If the tissue has cancer and is placed back in your body, the cancer could grow and spread. This procedure has not always been successful at all fertility centers and the long-term success rate is still being investigated.

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