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Egg freezing can be beneficial for a number of reasons for women wishing to preserve their fertility for the future including:

Women who want or need to delay childbearing in order to pursue educational, career or other personal goals. Because fertility is known to decline with age, freezing your eggs at an early reproductive age will best insure your chance for a future pregnancy. Unlike the ovary and oocytes (eggs), the uterus does not age and can carry a pregnancy well in to the 40s and 50s. Frozen (cryopreserved) eggs are stored at -196 degrees, so there is no deterioration in egg quality with time.

Women diagnosed with cancer. Egg freezing offers a chance to preserve eggs prior to chemotherapy, surgery or radiation. Most of these treatments destroy the eggs and lead to infertility. In some cases, viable eggs may be present after cancer treatment. Fertility preserving options vary depending on age, type of cancer, and cancer-treatment plan.

Women with objections to storing frozen embryos for religious and/or moral reasons. Following a standard IVF process, many individuals or couples have excess embryos. The decision to freeze these unused embryos may be difficult because the options for embryo disposition - how, when or if they will ever be used - can be an ethically and religiously complex choice for many. The decision to fertilize only as many eggs as will be utilized in the IVF process and freezing the remaining un-fertilized eggs may offer a positive solution for those with concerns about freezing embryos.

Women with a family history of early menopause. Some forms of early menopause (premature ovarian failure) are genetically-linked. Egg freezing offers a chance to preserve eggs before they are all depleted.

How does egg freezing work?

Although sperm and embryos have proved easy to freeze, the egg is the largest cell in the human body and contains a large amount of water. When frozen, ice crystals form that can destroy the cell. Over the years we have learned that we must dehydrate the egg and replace the water with an "anti-freeze" prior to freezing in order to prevent ice crystal formation. We also learned that because the shell of the egg hardens when frozen, sperm must be injected with a needle to fertilize the egg using a standard technique known as ICSI (Intracytoplasmic Sperm Injection).

Eggs are frozen using either a slow-freeze method or a flash-freezing process known as vitrification. Our high success rates were initially achieved utilizing the slow-freeze method since it is the most studied method and most similar to current embryo freezing techniques. The slow-freeze method may also be safer than the vitrification used by other practices which requires the eggs to be plunged directly into tanks of liquid nitrogen that may harbor viruses. However, at USC Fertility, we have expertise in both slow-freeze and vitrification methods.

What is involved in egg freezing?

In order to retrieve eggs for freezing, a patient undergoes the same hormone-injection process as in-vitro fertilization. The only difference is that following egg retrieval, the eggs are frozen for a period of time before they are thawed, fertilized and transferred to the uterus as embryos.

It takes approximately 4-6 weeks to complete the egg freezing cycle and is consistent with the initial stages of the IVF process including:

- 2-4 weeks of self-administered hormone injections and birth control pills to temporarily turn off natural hormones (this step can be skipped if there is urgency, such as prior to cancer therapy).
- 10-14 days of hormone injections to stimulate the ovaries and ripen multiple eggs.

Once the eggs have adequately matured, they are removed with a needle placed through the vagina under ultrasound guidance. This procedure is done under intravenous sedation and is not painful. The eggs are then immediately frozen. When the patient is ready to attempt pregnancy (this can be several years later) the eggs are thawed, injected with a single sperm to achieve fertilization, and transferred to the uterus as embryos.

How many eggs should I store to achieve a pregnancy?

Based on preliminary data from our study and that of others, egg thaw rates of 75% and fertilization rates of 75% are anticipated in women up to 38 years of age. Thus, if 10 eggs are frozen, 7 are expected to survive the thaw, and 5 to 6 are expected to fertilize and become embryos. Usually 3-4 embryos are transferred in women up to 38 years of age. We therefore recommend that 10 eggs be stored for each pregnancy attempt. Most women 38 years of age and under can expect to harvest 10 eggs per cycle.

What if I am over 38 years of age?

Expectations are that pregnancy rates from frozen eggs will depend on the women's age at the time she freezes her eggs, but will not be affected by the age at which she comes back to use them. Therefore, the chance of future pregnancy in women older than 38 at the time of freezing is likely to be lower than that seen for younger women. To date, there are few reports of pregnancies in women over 38 from frozen eggs. This is mostly due to lower age cutoffs in egg freezing studies and the relatively low number of women who have come back to use their frozen eggs so far. We do not know if eggs from women over 40 years of age will respond in the same manner to freezing as those from women 40 years of age or less.

Is egg freezing safe?

To date, approximately 2,000 babies have been born from frozen eggs. The largest published study of 900 babies from frozen eggs showed no increased rate of birth defects when compared to the general population. Additionally, results from one study showed no increased rates of chromosomal defects between embryos derived from frozen eggs compared to embryos derived from fresh eggs. There have also been over 300,000 children born worldwide from frozen embryos using primarily slow-freeze cryopreservation techniques without an increase in birth defects. Although these data are reassuring, it will take many years of follow-up to ensure that babies born from egg freezing technology have no higher rates of birth defects than those conceived through other means.