Fertility Preservation

fertility NEW ZEALAND

Fertility New Zealand is a registered charity supporting people with fertility issues

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Fertility preservation refers to obtaining and freezing eggs, sperm, embryos, testicular tissue or ovarian tissue which can then be used to try to have children at a later point in time. The material is stored in liquid nitrogen at -196°C, which suspends any biological activity, and theoretically could be kept forever in that state. Success rates with preserved eggs, sperm and embryos are similar to success rates with 'fresh' gametes and embryos in assisted reproductive technology due to advances in this technology over the past decade.

Reasons for fertility preservation

There are several reasons that people look to preserve their fertility. The first reason is medical. Some treatments for medical conditions unrelated to fertility can be damaging to eggs and sperm. The most common of these is cancer treatment, radiation therapy or chemotherapy, which can irreversibly damage eggs and the cells that give rise to sperm.

The second, and more recent, reason for fertility preservation is for social reasons. Some women choose to preserve some eggs while young with the intention of delaying parenthood until a more suitable time for having a family. The chance of success depends on the age at which the eggs were frozen and the number of eggs frozen.

Another reason for women to preserve their fertility is if there is a family history of early menopause (such as before age 40) or ovarian reserve (Anti-mullerian hormone) testing indicates that this is more likely.

Age-related infertility is less of an issue for men, with a decline in the quality of sperm and increase in birth defects, occurring from around age 55.

Costs and limitations

Egg freezing essentially involves the main part of a normal IVF process. It may cost around $10,000 or more for one cycle of treatment. There are also ongoing storage costs for the eggs or sperm which may be around $200–$300 per year. There is public funding for cancer patients to freeze their eggs or sperm prior to cancer treatment and for up to 10 years storage if they have not yet had a child.

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In women aged 35 or younger, one egg freezing cycle may give up to a 50% chance of a child from using frozen eggs later (this varies depending on the number of eggs obtained). Egg freezing for social reasons has only been common practice for several years in New Zealand, so there is not yet much data around how many eggs frozen for social reasons were actually used, at what age, and how many children were born.

The Human Assisted Reproductive Technology (HART) Act 2004 limits storage of eggs, sperm and embryos to 10 years, at which point they must be destroyed unless the person has obtained approval for extended storage from the Ethics Committee on Assisted Reproductive Technology (ECART).

Egg freezing – the process

Freezing eggs involves undergoing an IVF cycle, stopping at the point where the eggs would be fertilised with sperm. The goal of IVF is to use drugs to stimulate ovaries over a period of approximately two weeks to produce a number of eggs. You will be taught by the nurses to administer the daily injections used to stimulate the growth of eggs. Your egg production will be monitored through blood tests and scan(s), with the administration of a precisely timed 'trigger' injection when the eggs are ready for collection.

The eggs are then extracted from the ovaries via a long needle under ultrasound guidance. Usually narcotic analgesia is sufficient for sedation. Staff will ensure you understand any risks associated with IVF. The eggs are then examined by embryologists and frozen. You will be given a full report as to the number and quality of eggs that have been frozen. After egg collection the clinic will monitor your well-being to ensure your body settles down after the IVF cycle.

Sperm freezing – the process

Sperm is usually provided via masturbation, at the clinic or at home. For men without sperm in their semen, it is sometimes possible to collect sperm in small samples of testicular tissue using a fine needle, under narcotic sedation. In either case, the sample is quickly examined by embryologists and then frozen in a 'straw' format. You will be given a report as to the quality of sperm frozen.

Ovarian tissue freezing – the process

If cancer treatment is almost certain to led to sterility, freezing ovarian tissue may be an option. This involves laparoscopic surgery under general anaesthesia, where one or both ovaries are removed. The outside layer is carefully dissected and cut into 1mm slices by embryologists, then frozen in liquid nitrogen. The tissue can be thawed later and inserted into any remaining ovarian tissue or close by in the abdomen. This tissue may provide eggs for use in IVF. Ovarian tissue freezing is often used in girls who have cancer in childhood – their ovaries have more eggs and are easier to prepare for freezing. About 100 children have been born world-wide from IVF following ovarian tissue freezing. While freezing ovarian tissue is possible in New Zealand, use of thawed tissue has not yet received ethics approval.

The future

There are no techniques yet to preserve the fertility in boys who have testicular cancer before puberty. Research centres around isolating and freezing the stem cells that will later give rise to sperm. In the future, science may provide techniques similar to cloning which will enable human sperm and eggs to be created from non-reproductive tissue. To date, this has only been accomplished in mice, but at a low level of efficiency and the mice are prone to abnormalities.

Navigating fertility preservation

Considering fertility preservation and future family options can be overwhelming, especially if it is precipitated by needing cancer treatment. At some stage you'll need to decide what you would do with your frozen material should you not require or choose to use it. Current options are destroying or donating eggs or sperm.

Assistance is available from trained counsellors at all fertility clinics. ■

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