

Egg Freezing



**AUSTRALIAN
CONCEPT
FERTILITY
CENTRE**

Background

Human sperm and embryos have been routinely cryopreserved in conjunction with Assisted Reproductive Technology (ART) programmes since the first birth from frozen - thawed human sperm was reported in 1953 and the first pregnancy after cryopreservation of a human embryo was reported in 1983. Successful cryopreservation of human oocytes has proved more difficult. Because of their size and unique structural characteristics oocytes are more susceptible to damage during freezing than sperm or embryos.

The first pregnancy originating from a frozen – thawed and fertilized human oocyte was reported in 1986 which was soon followed by the first live birth reported in 1987. Oocyte freezing however, has until recently been relatively unsuccessful. The early results were variable with only 5 children born from 1987 – 1995.

Research from Melbourne in the 1990s showed that cryopreservation was not as detrimental to oocytes as was previously thought and that using ICSI (see sheet 12.3.8) provided better fertilization rates than insemination using conventional IVF (see sheet 12.3.5).

Around the turn of the century modified protocols were developed that improved survival and fertilization rates and as a result interest in oocyte cryopreservation increased and currently over 900 babies have been born.

Oocyte cryopreservation is now being offered in conjunction with ART programmes in the USA, Europe, Asia and Australia.

Who might benefit from oocyte freezing?

Oocyte freezing has been used in the following situations:

- Fertility preservation before chemotherapy or radiation therapy
- Religious or moral objection to freezing embryos
- Male partner unable to produce a semen sample at the time of oocyte retrieval, or after failed epididymal aspiration and testicular biopsy
- Fertility preservation in young women.

Methods used to freeze oocytes

Slow freezing: is the traditional method used to freeze sperm, eggs and embryos and has been used since the 1980s. Slow freezing is done using a controlled rate freezer and takes up to three hours to perform. Although very efficient, one of the problems associated with slow freezing is the formation of ice crystals which can cause damage during the freezing process.

Vitrification: Is a relatively new technique used to freeze eggs and embryos. Vitrification is very rapid freezing (only seconds) which causes the freezing media to become solid like glass which avoids crystallization which can occur with slow freezing. Vitrification is now considered to be simpler, more convenient and more effective than slow freezing. Concept started using vitrification in September 2008.

Steps involved in egg freezing

- A meeting with Concept staff to discuss the egg freezing requirements
- Medication is taken to stimulate the ovaries to mature several (10-15) eggs
- Egg collection in theatre
- Eggs are frozen in small plastic straws
- When needed eggs are thawed
- Eggs are fertilized using the ICSI procedure
- Embryos are grown in the laboratory
- An embryo is transferred to the uterus
- Pregnancy test