12.3.12.1 OVARIAN TISSUE CRYOPRESERVATION

Background

Ovarian tissue collection and cryopreservation has been developed for patients who are facing the possible loss of their ovarian function and / or oocyte quality due to various medical conditions or necessary medical therapies. The outer coating of the ovary, the cortex, normally contains an abundance of primordial follicles, which contain very immature oocytes (eggs). Ovarian tissue cryopreservation has been developed with the hope that by collecting and storing the tissue now, patients may at some time in the future use the tissue as a source of healthy oocytes.

Ovarian tissue cryopreservation has been studied for over 40 years, however, it has only been in the last few years that technologies have been available to cryopreserve samples with any success. The technology is still considered "experimental", and as such there is no guarantee of successful recovery of the tissue from storage. Much research is occurring worldwide, especially in the area of thawing the tissue and methods to stimulate mature follicle formation. At present the two main approaches are growth and development of the follicles in vitro or transplantation of the tissue back into the patient or into a host. Although the results seen so far are encouraging, very few pregnancies have been initiated with post-thaw ovarian tissue. The first birth following transplant of frozen ovarian tissue was reported in September 2004.

Procedure

Ovarian tissue collection involves surgery, usually in the form of laparoscopy, this involves a visualizing instrument inserted through a small incision in the abdomen. Several other small puncture incisions are made for the other instruments which are required for holding the ovary and obtaining the pieces of ovarian tissue. The exact method can vary from patient to patient; therefore your Gynecologist will explain the procedure in detail prior to surgery.

At the time of the tissue collection, small slices of tissue are shaved off the ovary (approximately half the size of a thumbnail) and placed into a special solution for transportation by the embryologist to the laboratory for processing and storage. A small amount of the tissue is evaluated to confirm the presence of primordial follicles, and the remainder is prepared for storage. The tissue is placed into a special media containing a cryoprotectant and then packaged into small plastic vials that are labeled with the patient's name and file number. The vials are then placed into a pre-programmed machine and frozen to –196°C, before being stored in liquid nitrogen.

12.3.12.2 OVARIAN TISSUE CRYOPRESERVATION

Risks
There are some risks associated with the laparoscopy, and adverse outcomes are seen in less than 1% of all cases. Your Gynecologist will be able to discuss these with you.

It is possible that when the tissue is thawed it may not yield usable oocytes, or may not result in pregnancy. The process of freezing the tissue or its prolonged storage may result in some damage to the immature follicles.
The collection of tissue is not thought to adversely affect any potential chance of the ovaries producing ooctyes at a later date. The tissue removed is less than 5% of the total number of oocytes in the ovaries. It is possible however, that the removal could result in scar tissue or damage to the remaining ovarian tissue, which may reduce the chance of pregnancy occurring naturally.

Uncertainties
The objective of ovarian tissue cryopreservation is to preserve an opportunity for the restoration of ovarian function at a later date. There are however, a number of unknowns and uncertainties that need to be considered.

This is an innovative program and as such successful utilization of human ovarian tissue for the purpose of initiating a pregnancy or restoring ovarian function is limited. The medical procedures offered are based on the results of animal experiments, and preliminary human experimentation. The team at Concept Fertility Centre has extensively reviewed research from around the world and employ techniques that are at present considered the most appropriate. The techniques for actual use of the tissue and development of healthy mature oocytes will be the focus of ongoing research that may take years to yield results. There is a possibility that such techniques may not become effective or safe enough to allow the use of the tissue in all patients.

It is not known whether children born as a result of using oocytes from stored ovarian tissue will have an increased risk of abnormalities. This type of uncertainty is common with any new method of laboratory-assisted reproduction.

Screening, Consent and Costs
All patients having ovarian tissue stored are required to undergo blood tests for Hepatitis B and C and HIV and complete the Ovarian Tissue Cryopreservation Consent form. This form indicates the patient's wishes with regard to the ovarian tissue that they do not use. The options are to either donate the tissue to research or to discard the tissue. The consent form also explains the costs of the storage.

Further Information
Further information on ovarian tissue cryopreservation is available from either the Scientific Director or Laboratory Manager, whom can be contacted via Concept Fertility Centre's main reception.