

## Fertility after Cancer Treatment

### Cancer Treatment and Female Fertility

#### Chemotherapy

Chemotherapy, the treatment of cancer with strong chemicals and drugs, can interfere with hormone production and directly damage the ovaries resulting in early menopause. It interferes with the genetic material of the eggs, just as it does to cancer cells, causing permanent damage to them. Drugs which typically damage ovarian function include cyclophosphamide, chlorambucil, mechlorethamine, busulfan and vinblastine. In some cases ovarian function resumes after treatment is complete. The chance of permanent infertility depends on the type of medication, its dose and duration, and the age of the woman being treated. As women pass 35 years of age the chances of total loss of fertility increase. There is little that can be done to prevent this damage although there is some evidence that the use of pituitary suppressant drugs, as used in IVF treatment, can reduce the degree of ovarian damage.

#### Radiation Therapy

The use of x-rays and other forms of radiation in cancer treatment can damage a woman's reproductive system. The degree of damage depends upon the amount and site of the radiation and the woman's age. Radiation to the pelvic area can damage the ovaries, the uterus and the fallopian tubes. Sometimes shields are used in an attempt to protect the ovaries however most radiation therapy to the pelvis will result in ovarian failure. Women who receive both chemotherapy and radiotherapy are at greatest risk for infertility.

#### Surgery

Surgery does not cause infertility directly unless reproductive organs are being removed. Abdominal surgery can however leave adhesions which can prevent the normal release of eggs from the ovaries and their pick-up by the fallopian tubes. Surgery to remove adhesions can correct this in some cases.

### Cancer Treatment and Male Fertility

#### Chemotherapy

The effect of chemotherapy on the male reproductive system depends upon the drug used and its dose and duration. Cyclophosphamide, chlorambucil, busulfan and vinblastine are particularly toxic to sperm production. In some cases sperm production can resume after treatment, often many years later.

#### Radiation Therapy

The effect of radiation on the testes depends on its site and the total dose. Lead shields can be used to protect the testes but damage is often permanent.

#### Surgery

Surgery to the pelvic area to treat cancer can result in nerve and lymph gland damage reducing the ability to ejaculate.

### Pre-Treatment Options

#### The Female

The woman can be put through the first part of an IVF treatment to retrieve eggs which can then be frozen for later use. If the woman has a partner the eggs can be fertilised in vitro with his sperm and frozen as embryos for later use. In general, embryo freezing is more successful than egg freezing. There is often insufficient time before cancer treatment has to commence for this to be done. Alternatively some of the outer layer of the ovary where future eggs are stored can be surgically removed before treatment and frozen. We await research on the successful growth of eggs from ovarian tissue in the laboratory before such tissue

can be used. The use of pituitary suppressant drugs during cancer treatment, as used in IVF treatment, may reduce the degree of ovarian damage.

### **The Male**

The freezing of sperm prior to cancer treatment is the best approach for the male. These can later be used to achieve a pregnancy in a partner by artificial insemination, IVF, and other assisted reproductive technologies. Unfortunately cancer itself can diminish sperm quality and the ability of the sperm to survive freezing and produce a pregnancy cannot be guaranteed.

### **Attempting Parenthood after Cancer Treatment**

It is likely that the involvement of an infertility specialist will be necessary to achieve a pregnancy after cancer treatment. A male will have his semen tested while a female will have hormonal tests to determine whether she still ovulates. Depending upon the amount of damage that has occurred, a range of options are available:

#### **Artificial Insemination with Husband Semen**

This is a relatively simple and minimally invasive treatment. It requires the male partner's semen, either fresh or frozen, to be normal or close to normal.

#### **Donor Insemination**

If sperm production in the male has been destroyed and none was frozen before treatment, the use of donated sperm is an option. This is a relatively simple and minimally invasive treatment and Fertility Gold Coast has a small sperm bank from which to choose.

#### **The Assisted Reproductive Technologies**

In vitro fertilisation (IVF) and sperm injection procedures (ICSI) can make the best of the poorest sperm and low egg numbers to maximise the chance of producing a pregnancy.

#### **Donated Eggs**

If ovarian function in the female has been destroyed by the treatment the use of eggs donated by another woman is an option. Fertility Gold Coast can assist you in the process of finding egg donors.

#### **Surrogacy**

The use of a surrogate or gestational carrier is an option but is currently illegal in the state of Queensland.

#### **Adoption**

As in all forms of infertility, adoption is a way to raise children. Unfortunately adoption agencies may decline to place children with couples with a history of cancer.

#### **Child-Free Living**

Some couples with infertility, particularly following cancer treatment, make the conscious decision to live without children and contribute to the nurturing of children within their extended family. This is a personal decision and involves grieving the loss of reproductive ability.

Clinicians, scientists and counsellors are able to explain all the options for fertility after cancer treatment and we have the laboratories and facilities to provide the treatments.

Information sheets on all of the options described above are available from the Fertility Gold Coast office.