

ENABLING WOMEN TO HAVE CHILDREN AFTER CANCER TREATMENT



Cancer treatment can lead to infertility.

Each year about 160,000 women in the UK and many more throughout the world are diagnosed with cancer. Cancer is a major killer and its diagnosis is devastating news for patients. But thanks to intensive research and improved therapeutics, a growing number of patients are being treated successfully.

Unfortunately, cancer therapy often involves irradiation or use of chemotherapy drugs, which for women can result in infertility or early menopause. As a consequence, some female cancer survivors have been denied the possibility of having children after cancer therapy.

As cancer treatment outcomes have improved, the long-term consequences of such treatment have assumed greater importance for survivors, and fertility preservation for women with cancer has become a key aim for all concerned.

Traditionally, female cancer patients who wanted to have children in the future had limited options, including emergency in vitro fertilisation (IVF).



INTRODUCING OVARIAN CRYOPRESERVATION TO THE CLINIC

Researchers from the University of Edinburgh were the first to show that ovarian tissue obtained via laparoscopy (keyhole surgery) could be cryopreserved (frozen for long-term storage) and used for fertility preservation, ultimately leading to successful conception after completion of chemotherapy and/or radiotherapy. This is profoundly significant to female survivors of cancer therapy who would otherwise face an infertile future.

The procedure was introduced into clinical practice in Edinburgh, in collaboration with the Tissue Services directorate of the Scottish National Blood Transfusion Service in 1997. This was the world's first clinical application of the procedure.



Cryopreserving ovarian tissue.





The oocyte and surrounding cells of a preovulatory follicle.



PUTTING RESEARCH INTO ACTION – NEW PROCEDURE FOR FERTILITY PRESERVATION

When a woman is diagnosed with cancer she usually has little time before beginning her treatment. This may preclude the possibility of obtaining and storing individual oocytes (female reproductive cells), which typically requires a few weeks and may result in only a small number of oocytes being stored. Also, the ovarian stimulation needed is not appropriate in girls and younger women. Fragments of a patient's ovarian tissue, however, can be obtained using surgical procedures within a relatively short window of time, at any age.

Scientists at the University of Edinburgh, including Professors Richard Anderson, David Baird and Hamish Wallace, contributed to the development of efficient protocols for the freezing and long-term storage of ovarian tissue.

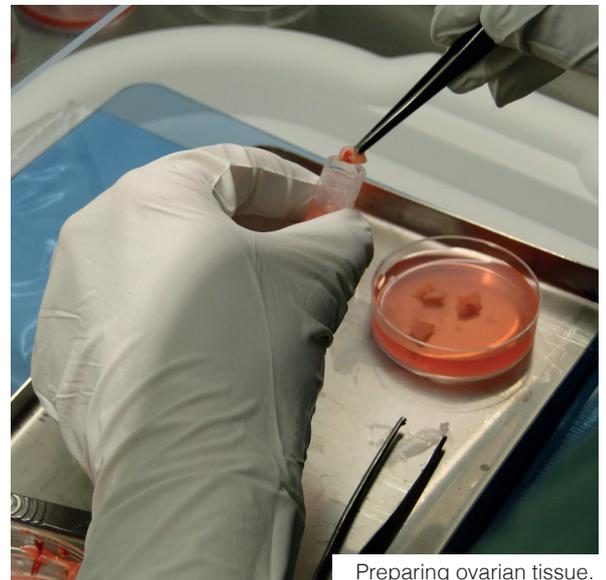
In 1994, for the first time, they demonstrated that spontaneous ovarian cycles and fertility can be restored by autotransplantation (transplantation back to the original donor) of ovarian cortex (part of the ovary containing the oocytes) in an animal model. They also showed that this procedure can be performed safely using minimally invasive keyhole surgery in adult women and girls. Recently, University of Edinburgh researchers have demonstrated that the criteria they developed for offering ovarian cryopreservation can be used accurately to identify those women and girls at most risk of ovarian damage.

Professors Anderson and Wallace were also instrumental in establishing in 2009 the International Society for Fertility Preservation and in 2010 a task force for fertility preservation of the European Society for Human Reproduction and Embryology, whose aims are to develop ovarian tissue cryopreservation for much wider access to women across Europe and worldwide.



IMPACT ON CLINICAL PRACTICE, HEALTH AND WELFARE

Ovarian cryopreservation has become widespread in clinical practice worldwide. The term 'oncofertility' is now in general use to describe this developing clinical specialty, linking fertility preservation and cancer treatment. Major centres of expertise and national programmes operate in Denmark, Belgium, France, Spain, Germany, the US and Australia. Appropriate fertility preservation is now regarded as standard care in the UK and many other countries.



Preparing ovarian tissue.

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