

Practical Guidelines for Fertility Preservation in Cancer Patients

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When the cancer is controlled, the later effect of treatment on quality of life, in particular fertility, can be a major issue for these young cancer survivors. Unfortunately, aggressive cancer treatments can cause gonadal failure. Indeed, most of the patients undergoing hematopoietic cell transplant will lose fertility due to high dose of chemotherapeutic agents and/or ionizing radiation. Where the risk of gonadal failure is high with chemotherapy and radiotherapy, it is wise to attempt to safeguard the fertility before treatment. To date, there are a few options for fertility preservation in female cancer patients including GnRHa administration with chemotherapy, freezing of embryos, oocytes, or ovarian tissue before chemotherapy and/or radiotherapy, transposition of the ovary before radiation, but most of these options are experimental.

The efficacy of GnRH analog (Lupron, Zoladex, Goserelin) treatment to protect the ovary from cytotoxic cancer therapy is controversial. Nevertheless, most studies showed that GnRH agonist can protect immature eggs from chemotherapy in women with cancer. Of note, GnRH agonist has no beneficial effect to patients undergoing radiation therapy.

Embryo freezing is a well established technique, but it cannot be an option for the patient who does not have a partner, or who cannot delay cancer treatment for more than 2 weeks (as it requires an IVF procedure). The technology of egg freezing has been improved last 2-3 years, and the live birth rate per transfer after 2005 is above 30% in some centers. However, the oocyte freezing is not an established technology in most IVF centers, and its success rate is still much lower than that of embryo freezing. Egg freezing also requires ovarian stimulation for 2 weeks, which can delay cancer treatment. Furthermore, the safety of ovarian stimulation with fertility medications (such as Follistim, Gonal F) has not been established to the breast cancer patients with positive hormone receptors (ERPR).

A new strategy, cryopreservation of ovarian tissue followed by transplantation of stored ovarian tissue, may be effective for reinstating fertility for women facing premature ovarian failure. For this strategy the ovary should be collected surgically (usually by laparoscopy) before freezing. The safety of auto-transplantation of human ovarian tissue is a crucial issue for cancer patients. At present, the type of malignancy and the prognosis are prime considerations to determine the candidates for this procedure. Ovarian cryopreservation for patients with systemic or disseminated malignancies should be discouraged until reliable cancer screening methods become available or in vitro culture techniques can be perfected.