

Recent advances in fertility preservation

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Abstract

Background: Most cancer treatments like chemotherapy, radiotherapy or a combination of both are highly toxic to the gonads, putting girls and young women at risk of premature ovarian insufficiency and subsequent infertility. Non-oncological conditions may also require therapies that put women's reproductive potential at risk. Fertility preservation counseling should therefore be offered to all patients requiring gonadotoxic treatments, and to those who wish to postpone motherhood for social/personal reasons. Among the most effective fertility preservation options available today, oocyte and embryo cryopreservation, and ovarian tissue cryopreservation have emerged as the front-runners.

Aim: This review focuses on the currently available and most widely accepted fertility preservation and restoration strategies, with a special focus on recent advances in ovarian tissue cryopreservation and transplantation.

Conclusions: To manage cancer patients satisfactorily and offer proper counsel on the most appropriate option available to them, different parameters need to be taken into account, including pubertal status, partner status and urgency of treatment for the underlying pathology. When fertility preservation is carried out for non-oncological indications or personal reasons, oocyte cryopreservation by vitrification is clearly the highest-yield clinical strategy. Ovarian tissue cryopreservation followed by transplantation is rapidly gaining ground as a fertility preservation and restoration strategy, and will hopefully soon have its 'experimental' label removed to allow practitioners to move on to open clinical application. Techniques to improve grafted ovarian tissue life span and quality as well as to avoid transmission of malignant cells have been developed, showing promise as a way to expand this procedure.

Keywords: embryo cryopreservation; fertility preservation; oocyte cryopreservation; ovarian tissue cryopreservation; ovarian tissue transplantation.