

ASCO Recommendations on Fertility Preservation in People Treated for Cancer: Fertility Preservation Options & Discussion Points

Intervention	Definition	Comment	Considerations*
Females			
Embryo Cryopreservation (S)	Harvesting eggs, in vitro fertilization, and freezing of embryos for later implantation	The most established technique for fertility preservation in women.	<ul style="list-style-type: none"> ◆ Requires 10-14 days of ovarian stimulation from the beginning of menstrual cycle ◆ Outpatient surgical procedure ◆ Requires partner or donor sperm ◆ Approximately \$8,000 per cycle, \$350/year storage fees
Oocyte Cryopreservation (I)	Harvesting and freezing of unfertilized eggs	Small case series and case reports; as of 2005, 120 live births reported, approximately 1.6% live births per frozen oocyte (3-4 times lower than standard IVF)	<ul style="list-style-type: none"> ◆ Requires 10-14 days of ovarian stimulation from the beginning of menstrual cycle ◆ Outpatient surgical procedure ◆ Approximately \$8,000 per cycle, \$350/year storage fees
Ovarian Cryopreservation and Transplantation (I)	Freezing of ovarian tissue and reimplantation after cancer treatment	Case reports; as of 2005, 2 live births reported	<ul style="list-style-type: none"> ◆ Not suitable when risk of ovarian involvement is high ◆ Same day outpatient surgical procedure
Gonadal shielding during radiation therapy (S)	Use of shielding to reduce the dose of radiation delivered to the reproductive organs	Case series	<ul style="list-style-type: none"> ◆ Only possible with selected radiation fields and anatomy ◆ Expertise is required to ensure shielding does not increase dose delivered to the reproductive organs
Ovarian Transposition (oophoropexy) (S)	Surgical repositioning of ovaries away from the radiation field	Large cohort studies and case series suggest approximately 50% chance of success due to altered ovarian blood flow and scattered radiation	<ul style="list-style-type: none"> ◆ Same day outpatient surgical procedure ◆ Transposition should be performed just before radiation therapy to prevent return of ovaries to former position ◆ May need repositioning or in vitro fertilization (IVF) to conceive
Trachelectomy (S)	Surgical removal of the cervix while preserving the uterus	Large case series and case reports	<ul style="list-style-type: none"> ◆ Inpatient surgical procedure ◆ Limited to early stage cervical cancer; no evidence of higher cancer relapse rate in appropriate candidates ◆ Expertise may not be widely available
Other conservative gynecologic surgery (S/I)	Minimization of normal tissue resection	Large case series and case reports	<ul style="list-style-type: none"> ◆ Expertise may not be widely available
Ovarian suppression with Gonadotropin Releasing Hormone (GnRH) analogs or antagonists (I)	Use of hormonal therapies to protect ovarian tissue during chemotherapy or radiation therapy	Small randomized studies and case series. Larger randomized trials in progress.	<ul style="list-style-type: none"> ◆ Medication given before and during treatment with chemotherapy ◆ Approximately \$500/month

*Costs are estimates S=Standard Intervention I=Investigational Intervention

These tables are derived from *ASCO Recommendations on Fertility Preservation in People Treated for Cancer*. They are practice resources based on ASCO® practice guidelines and are not intended to substitute for the independent professional judgment of the treating physician. Practice guidelines do not account for individual variation among patients. These tables do not purport to suggest any particular course of medical treatment. Use of the practice guidelines and these tables are voluntary. The practice guidelines and additional information are available at <http://www.asco.org/guidelines/fertility>. Copyright ©American Society of Clinical Oncology 2006

Intervention	Definition	Comment	Considerations*
Males			
Sperm cryopreservation (S) after masturbation	Freezing sperm obtained through masturbation	The most established technique for fertility preservation in men; large cohort studies in men with cancer	<ul style="list-style-type: none"> ◆ Outpatient procedure ◆ Approximately \$1,500 for 3 samples stored for 3 years, storage fee for additional years
Sperm cryopreservation (S) after alternative methods of sperm collection	Freezing sperm obtained through testicular aspiration or extraction, electroejaculation under sedation, or from a post-masturbation urine sample.	Small case series and case reports	<ul style="list-style-type: none"> ◆ Testicular sperm extraction – outpatient surgical procedure
Gonadal shielding during radiation therapy (S)	Use of shielding to reduce the dose of radiation delivered to the testicles	Case series	<ul style="list-style-type: none"> ◆ Only possible with selected radiation fields and anatomy ◆ Expertise is required to ensure shielding does not increase dose delivered to the reproductive organs
Testicular tissue cryopreservation Testis xenografting Spermatogonial isolation (I)	Freezing testicular tissue or germ cells and reimplantation after cancer treatment or maturation in animals	Has not been tested in humans; successful application in animal models	<ul style="list-style-type: none"> ◆ Outpatient surgical procedure
Testicular suppression with Gonadotropin Releasing Hormone (GnRH) analogs or antagonists (I)	Use of hormonal therapies to protect testicular tissue during chemotherapy or radiation therapy	Studies do not support the effectiveness of this approach	

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Fertility Preservation Patient-Physician Discussion Points

- ◆ Cancer and cancer treatments vary in their likelihood of causing infertility. Individual factors such as disease, age, treatment type and dosages, and pre-treatment fertility should be considered in counseling patients about the likelihood of infertility.
- ◆ Patients who are interested in fertility preservation should consider their options as soon as possible to maximize the likelihood of success. Some female treatments are dependent upon phase of the menstrual cycle and can only be initiated at monthly intervals. Discussion with reproductive specialists and review of available information from patient advocacy resources (for example, FertileHope, the Lance Armstrong Foundation/Livestrong, the Susan G. Komen Breast Cancer Foundation) can facilitate decision-making and treatment planning.
- ◆ The two methods of fertility preservation with the highest likelihood of success are sperm cryopreservation for males and embryo freezing for females. Conservative surgical approaches and transposition of ovaries or gonadal shielding prior to radiation therapy may also preserve fertility in selected cancers. At this time (2006), other approaches should be considered investigational.
- ◆ Data are very limited, but there appears to be no detectable increased risk of disease recurrence associated with most fertility preservation methods and pregnancy, even in hormonally sensitive tumors.
- ◆ Aside from hereditary genetic syndromes and in-utero exposure to chemotherapy, there is no evidence that a history of cancer, cancer therapy, or fertility interventions increase the risk of cancer or congenital abnormalities in the progeny.
- ◆ Treatment-related infertility may be associated with psychosocial distress, and early referral for counseling may be beneficial in moderately distressed people.