

## Fertility Preservation and Potential Future Treatment Options

In spite of large improvements in health care technologies and more access to reproductive health services during past decades, there are many reports on human fertility decline. The role of life style and environmental factors on human fertility has attracted more attention recently and is the subject of worldwide studies on causes of male and female factor infertility. The important factors such as aging and delayed parenthood, inappropriate diet and poor nutrition, obesity, lack of exercise or intense professional exercise, emotional stress, environmental and occupational chemical hazards, radiotherapy, chemotherapy, air pollution, smoking and drug addiction, heavy use of alcohol/caffeine and several reproductive disorders (*e.g.* endometriosis, uterine fibroids, surgery, genetic predisposition and sexually transmitted infections (STIs)) can negatively affect human fertility. However, several approaches to deal with these factors and to reduce their impact on fertility are recommended. One of such preventative care approaches is fertility preservation with beneficial outcomes for individuals at risk of losing their fertility (1).

The field of fertility preservation has quickly evolved during the last two decades with the hope to invent new technologies and find protocols for all those at risk of fertility loss. Individuals at risk of damage to their reproductive function request rapid counseling for all options on fertility preservation and for an authentic clinic with multidisciplinary team of experts including oncologists, endocrinologists, andrologists, surgeons, psychiatrists, geneticists and embryologists. Unfortunately, a small number of candidates actually receive fertility preservation services prior to total loss of their fertility. Financial, educational, cultural and structural barriers exist for these candidates.

At present, different options of fertility preservation are available for male and female candidates. The options for female candidates are pre-pubertal and post-pubertal ovarian tissue cryopreservation and oocyte and embryo freezing. The alternatives for male candidates are similar including pre-pubertal testicular tissue cryopreservation, post-pubertal ejaculated, epididymal or testicular sperm cryopreservation and embryo freezing for married cases. The priority for use of them depends on several factors, such as gender, age, marital status and several other factors. In spite of the list of options available for patients at risk of fertility loss, a large number of women with uterus failure cannot experience pregnancy and term child birth. They are mostly candidates of surrogacy and several legal, emotional, ethical and social issues are related to this practice (2). The exceptional and difficult work of Turkish and Swedish teams provides a new option for women with absolute uterine factor infertility. They performed uterine transplantation in a woman from the uterus of a brain-death donor. The report of the first successful transplantation in terms of organ survival after uterine transplantation and clinical pregnancy was published; however, the pregnancy ended in abortion. The uterus unlike the other transplanted organs requires huge vascular and nerves network, changes in the local immune system and many other changes in uterus regenerate during successful implantation and normal pregnancy (3). Therefore, a normal pregnancy and live birth is anticipated through this valuable initial work. Although many research works were done in the field of fertility preservation, still there are lots of challenges to be faced. In addition, the future research on fertility preservation along with restoring the fertility of people who have lost their ability should be focused on changes in lifestyle and treatment procedures, particularly in current protocols of cancer therapy which culminate in damage or loss of fertility.

### References

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