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ZAHRA ASSOCIATION

Renewed Life Campaign Guide

The Importance of Reproductive Health in Breast Cancer Treatment



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The Importance of Reproductive Health in Breast Cancer Treatment

Breast cancer is the most common cancer among women, including women of reproductive age. Modern treatments achieve very high cure rates; however, some treatments, particularly chemotherapy, may negatively and permanently affect the ovaries' ability to produce eggs.

According to the American Society of Clinical Oncology (ASCO) guidelines updated in 2025, discussing fertility preservation options with the medical team before starting treatment—and during the post-treatment follow-up phase—is not a secondary option or a luxury. It is a fundamental right for every patient and an integral part of the comprehensive treatment plan and survivorship care.

The Effects of Chemotherapy on the Ovaries

Chemotherapy targets rapidly dividing cells, which can affect the ovaries' biological reserve in the following ways:

- Reduced ovarian reserve:** Treatment can cause a sharp and permanent reduction in the number of primordial eggs.

. Recent studies show a significant decrease in anti-Müllerian hormone (AMH) levels, with average levels falling from approximately 3.8 ng/mL at diagnosis to less than 0.8 ng/mL after treatment. More than half of patients experience a very low ovarian reserve (AMH below 0.5 ng/mL).

Premature menopause: Chemotherapy can accelerate the onset of early menopause. This likelihood increases with the patient's age, particularly in women over 35-40 years.

Varying effects of medications: Alkylating agents, such as cyclophosphamide, are considered more damaging to ovarian tissue than other treatments.

•**Effects on fertility quality and timing:** Even if menstruation resumes after treatment, the actual ovarian reserve and reproductive capacity may be reduced, narrowing the window of opportunity for future pregnancy.

Immediate Action Plan Following Diagnosis

Time is critical; therefore, a rapid and well-coordinated protocol is followed to avoid any delay in starting treatment:

•**Immediate referral:** Once the diagnosis is confirmed, the oncologist immediately refers the patient to a fertility specialist and reproductive endocrinologist.

- Rapid assessment (within 24-48 hours):** The patient's condition is assessed through a blood test measuring anti-Müllerian hormone (AMH) and an ultrasound examination to count antral follicles (AFC), while taking the patient's age and medical history into consideration.
- Time coordination:** An ovarian stimulation and egg retrieval cycle usually takes only 10-14 days. It can be started at any point during the menstrual cycle (Random Start Protocol), meaning it does not delay the start of chemotherapy.
- Counseling and guidance:** Provide clear and comprehensive counseling on success rates and established safety measures, emphasizing that fertility preservation is an essential part of the treatment plan.

Available Fertility Preservation Options and Solutions

1. Egg Freezing (Oocyte Cryopreservation)

- Procedure:** The ovaries are stimulated with safe hormonal medications to produce multiple eggs. The eggs are then retrieved under ultrasound guidance and frozen using rapid cooling (vitrification).
- Effectiveness:** With modern freezing techniques, the survival rate of eggs after thawing exceeds 90%.

- Success rate:** The likelihood of achieving a future pregnancy depends on the patient's age at the time of freezing and the number of eggs retrieved. Younger age and a higher number of eggs are associated with better chances of success.

- Recommended number:** Freezing 15-20 mature eggs (or more, depending on age) is recommended to provide a reasonable chance of achieving at least one live birth.

2. Embryo Freezing

- Procedure:** Eggs are retrieved and fertilized in a laboratory using the husband's sperm to produce embryos. The embryos are then frozen at either the cleavage stage or the blastocyst stage.

- Effectiveness and success rates:** This is a more established option, with higher success rates compared with freezing unfertilized eggs.

- Illustrative example:** For patients under 35, the success rate of a frozen embryo transfer can reach approximately 40-50% per transfer attempt at advanced fertility centers. This relatively high rate can provide considerable reassurance for the future.

Recent studies have shown that clinical pregnancy and live birth rates following the use of frozen embryos in breast cancer patients are approximately comparable to those of women without cancer.

3. Ovarian Tissue Cryopreservation

- Procedure:** A portion of the outer ovarian cortex is removed through a minimally invasive laparoscopic procedure and frozen for possible reimplantation after recovery.

- Indications:** This option is intended for patients who do not have enough time (less than 10 days) to begin hormonal stimulation, girls who have not yet reached puberty, or patients with contraindications to ovarian stimulation.

- Current status:** According to the ASCO 2025 guidelines, ovarian tissue cryopreservation has become an established method, rather than an experimental procedure, at many advanced centers worldwide.

Rates of hormonal function recovery can exceed 90%, while live birth rates following transplantation range from 30-40% in recent studies.

Important reminder: Recent scientific studies, including the extended follow-up results of the POSITIVE study, indicate that approximately 70-76% of breast cancer survivors who attempted pregnancy after treatment were able to achieve pregnancy, with a live birth rate of approximately 69%. Many of these pregnancies occurred naturally. Freezing techniques also provide an additional safety net, helping preserve fertility with high success rates.

Hormonal Safety and Medical Precautions

Here is how your safety is ensured during the ovarian stimulation process:

- Letrozole Protocol:** Letrozole, an aromatase inhibitor, is used alongside ovarian stimulation medications.
- Purpose of the protocol:** To prevent estrogen levels in the blood from rising and keep them within normal or very low, safe ranges.
- Medical safety:** Egg development is stimulated without stimulating cancer cells, particularly in hormone receptor-positive (ER+) tumors.

Extensive research and long-term studies, including recent systematic reviews, have demonstrated that this procedure is safe and does not increase the risk of cancer recurrence or delay recovery.

The POSITIVE study also found that a history of ovarian stimulation and egg or embryo freezing was not associated with an increased risk of cancer-related events.

Additional note: Gonadotropin-releasing hormone agonists (GnRHa) may be used as an adjunct during chemotherapy to protect the ovaries in breast cancer patients. However, they do not replace established fertility preservation methods (egg, embryo, or ovarian tissue freezing).

Important Rules and Recommendations During and After Treatment

1. Preventing Pregnancy During Treatment (Essential)

- Requirement:** Pregnancy must be strictly avoided during chemotherapy, radiation therapy, or hormonal therapy because of the risk of fetal abnormalities.
- Safe methods:** A copper intrauterine device (non-hormonal IUD) or barrier methods (such as condoms) are recommended.

•**Restrictions:** Hormonal birth control pills and hormonal IUDs should not be used without thorough medical consultation.

2. Safe Timing for Pregnancy After Recovery

The recommended waiting period before planning a pregnancy depends on the type of cancer and the treatment plan (for example, waiting 2-5 years when long-term hormonal therapy is required).

This should be determined through direct coordination between the oncologist and fertility specialist.

For patients with hormone receptor-positive breast cancer, the POSITIVE study, with extended follow-up of up to 71 months, showed that temporarily interrupting adjuvant hormonal therapy to attempt pregnancy did not increase the risk of cancer recurrence during medium- and long-term follow-up. Resuming hormonal therapy after childbirth and breastfeeding is recommended to complete the planned duration of treatment.

Correcting Myths and Misconceptions

1. "Egg freezing will delay the start of my cancer treatment"

Correction: With early coordination and prompt initiation of the Random Start Protocol, egg freezing can be completed within just 10-14 days without affecting the chemotherapy schedule.

2. "Hormonal stimulation causes cancer to spread or return"

Correction: With modern safety protocols, such as the letrozole protocol, estrogen levels remain low and within safe ranges. Multiple studies have demonstrated no increased risk of cancer recurrence.

3. "There is no hope of becoming pregnant or having children after cancer recovery"

Correction: Pregnancy remains a real possibility, with encouraging prospects. Recent data show that the majority of survivors who attempt pregnancy are successful (approximately 70% or more). Freezing techniques provide an additional safety net to help preserve fertility with high success rates.

Fertility preservation is a fundamental right and an integral part of the recovery journey.

Consult your medical team early... Every day matters.