

Fertility preservation during cancer treatment: The Korean Society for Fertility Preservation clinical guidelines

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While many fertility preservation (FP) options now exist for reproductive-aged cancer patients, access to these services continues to be limited. A comprehensive FP program should be organized to serve oncofertility patients effectively. Also, much effort is needed from various individuals—patients, specialists from various fields, and consultants—to facilitate FP in a timely manner. Various challenges still exist in improving access to FP programs. To improve access to FP treatment, it is important to educate oncologists and patients via electronic tools and to actively navigate patients through the system. Reproductive endocrinology practices that receive oncofertility referrals must be equipped to provide a full range of options on short notice. A multidisciplinary team approach is required, involving physicians, nurses, mental health professionals, office staff, and laboratory personnel. The bottom line of FP patient care is to understand the true nature of each patient's specific situation and to develop a patient flow system that will help build a successful FP program. Expanding the patient flow system to all comprehensive cancer centers will ensure that all patients are provided with adequate information regarding their fertility, regardless of geography.

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Introduction

Over 150,000 reproductive-aged individuals face fertility-threatening cancer treatments each year. In these patients as well as childhood cancer patients, improvements in the detection and treatment of cancer have greatly prolonged long-term survival. Hence, such treatments have made it possible for these individuals to consider long-term health and quality of life after cancer, including having biological children. Various methods of fertility preservation (FP) are

now available for both males and females [1]. The overarching goal of a clinical FP program is to help these young patients and their physicians to consider the impact of cancer treatment on future fertility, facilitating FP efforts in what is often a limited time period before treatment begins.

FP is not limited to oncology patients who face chemotherapy, radiation, or surgical treatments [1]. Patients with certain rheumatic diseases, such as lupus, rheumatoid arthritis, or Crohn disease, and those planning to undergo bone marrow or stem cell transplantation for hematologic diseases are also candidates. Both female and male patients should be made aware of the range of FP options available to them.

Female patients may benefit from a consultation that includes a discussion of the most up-to-date, and effective technology that is specifically appropriate for their given circumstances based on the time to definitive treatment, age, partner status, and open research

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protocols.

A comprehensive FP program should provide timely and comprehensive FP consultations for patients facing fertility-threatening treatments, offer patients a range of appropriate FP treatments, coordinate care for and safely navigate medically complicated patients through FP treatments, and serve as a resource for patients and health care providers seeking up-to-date FP information [2]. To accomplish these goals, a successful FP program requires the following: a multidisciplinary team; a clear patient flow plan; an adequate access to equipment, supplies, and expertise for banking gametes, embryos, and gonadal tissue, which often must occur on short notice; and pertinent communication and marketing support. These represent the multidisciplinary characteristics for any FP program.

Patient flow under time pressure

Patients planned to undergo chemotherapy, radiotherapy, hormonal therapy, or surgeries should be informed of the potential impact of these treatments on future reproductive options [3]. Because this discussion usually takes place shortly after a recent cancer diagnosis, it is possible for these patients to be unable to immediately process the information that they receive regarding FP. For this reason, an FP consultation may not be as straightforward as an *in vitro* fertilization consultation, and may thus require multiple methods of communication—oral, printed materials, and web-based resources—to ensure that patients understand the risk of the chosen cancer treatment on future fertility as well as to provide information on various FP options [4]. Given the short period of time prior to the initiation of cancer treatment, such consultation and information are critical for patients to make the most informed decision. Due to informational overload and/or emotional stress from the recent cancer diagnosis, it may be difficult for these patients to clearly process and make decisions about the best treatment option appropriate for their specific needs. To aid these patients to make the best decision about their future fertility, providing an opportunity to ask questions about FP is strongly recommended, and for this, additional consultations with a fertility specialist after the first FP consultation may be effective [5]. A designated FP patient navigator or trained appointment staff may expedite the referral process of these patients to an FP consultant. Normally, most FP consultations occur within the first 24 to 72 hours after the referral.

FP consultation primarily entails the following: a discussion of the risks posed by the proposed cancer treatment on future fertility, an evaluation of the patient's desire and ability to undergo FP treatments, a discussion of specific FP options while referring to specific resources, and a review of the success rate of FP procedures. Decisions on whether to pursue FP treatment involve clear communica-

tion among the patient, their support system, the reproductive endocrinologist or urologist, and the treating oncologist or rheumatologist. The attitude of the primary physician toward FP treatment is an important factor in patients' decision-making process. Close communication between primary physicians and fertility specialists is critical to ensure successful FP treatment. Referrals to a psychologist may be made as needed.

For patients who elect to undergo ovarian stimulation for egg or embryo banking, a protocol is selected that minimizes treatment time, and tentative dates for egg retrieval and chemotherapy initiation is arranged. Anesthesia consultation is also initiated. During ovarian stimulation, close communication between the FP team and the medical oncology or rheumatology team allows continuous updates on the patient's status. Moreover, an appropriate infectious disease testing of the patient or couple is undertaken. Of note, infectious disease testing should be performed if the gametes or embryos are to be used in third-party reproduction in the future.

Surgical dates are set for patients who decide to preserve ovarian and testicular tissue or undergo other FP surgical procedures, such as ovarian transposition. The pathology team is then contacted regarding the disposition of the tissue to maximize future fertility potential. After the completion of FP treatment, a summary of the procedure is reported to the patient and to the oncology, hematology, or rheumatology team. If the patient banks gametes or tissues, annual follow-up regarding the banked tissues is conducted.

Improving access to care

Despite growing support from the medical community, patient access to FP services remains limited [6]. This is largely due to the lack of routine referrals to a reproductive endocrinologist. Although most oncologists agree on the importance of future fertility of cancer patients, only 47% make routine referrals to a reproductive endocrinologist, according to a recent report [6]. In a recent survey assessing the attitudes and practice patterns of pediatric oncology specialists toward FP, it was shown that the majority of respondents acknowledged that fertility threats are a major concern for patients and that all pubertal cancer patients should undergo an FP consultation [7]. Moreover, while almost half of oncologists were familiar with the existence of the American Society of Clinical Oncology recommendations regarding FP, only 39% of health care professionals admitted to using them when deciding on a treatment option. The following may be the reasons why oncologists do not discuss fertility risks and make routine referrals: a focus on treating the disease itself; the perceived urgency of cancer treatment; the perception that limited proven options for FP exist, particularly for prepubertal patients; the perception that fertility may not be important to patients; and not knowing to

whom to refer patients interested in FP.

Nonetheless, while clinical judgment may be used to decide whether FP techniques are appropriate, referrals should still be made to expedite the discussion about the risks and available options. Cancer patients need immediate consultations and access to information regarding all available options, including a full list of contacts who can quickly make appropriate accommodations. If a referral is made soon after a cancer diagnosis, there is often a minimal time delay for that patient to begin their cancer therapy should they wish to pursue FP [8].

In developing an effective FP program for pediatric and young adult oncology patients, it is critical to take an interdisciplinary approach, encompassing specialists from oncology, reproductive endocrinology, urology, and psychology. In young cancer survivors, the fertility issue is not as urgent as in adult cancer survivors [9]. It is usually hard for pediatric cancer survivors to fully understand the full scope of FP counseling. Including the parents or guardians in FP counseling is crucial since the FP decision is made by them in most cases. A collaborative relationship is important in facilitating communication and appropriate referral for oncofertility patients.

Equipped reproductive endocrinology practices

Given the urgency of cancer treatment, time can be a major limiting factor for these patients. As such, it is critical that the facility of the referred reproductive endocrinologist be prepared for proper patient care, accommodating the urgent needs of these patients. To accommodate oncofertility patients adequately, the office must have an “all hands on deck” approach. Clinical and laboratory staffs must be available immediately and always provide a full range of FP options for all kinds of oncofertility patients.

After the referral, an urgent consultation with the reproductive endocrinologist is the first step for patients to fully consider all FP options. In addition to the issues mentioned above, the disposition of gametes and tissues should be addressed. This process can be very overwhelming for patients, as they may still be in shock from the recent diagnosis and be perplexed by the task of deciding on the appropriate treatment strategy. Unfortunately, patients must make a quick decision about whether—or which—FP option to pursue.

Due to the urgent nature of oncofertility care, we recommend a team approach in patient counseling. In addition, electronic patient education tools can help patients throughout the decision-making process. This approach can provide more comprehensive information to patients, allowing for more informed decisions, as well as a better understanding of the psychosocial and medical needs of each patient.

Discussion

While many FP options now exist for reproductive-aged cancer patients, access to these services continues to be limited to a few academic centers. Much effort and coordination are needed from various individuals—patients, specialists from various fields, and consultants—to go from diagnosis to completion of FP in a relatively short period of time. Access to FP programs can be improved through appropriate education of oncologists and patients via electronic tools and active patient navigation. Reproductive endocrinology practices that receive oncofertility referrals must be equipped to provide a full range of options on short notice as well as be accommodating to the urgent needs of these patients. The coordination of care demands a multidisciplinary team approach, involving physicians, nurses, mental health professionals, office staff, and laboratory personnel. While caring for oncofertility patients can be challenging, helping patients navigate FP options can be incredibly gratifying because it gives patients some control over their reproductive options and provides hope for the future. Expanding the patient flow system to all comprehensive cancer centers will ensure that all patients are provided with adequate information regarding their fertility regardless of geography.

Conflict of interest

No potential conflict of interest relevant to this article was reported.

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