**Assessing the Effects of Ovarian Cancer Treatment on Fertility in Young Women**

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**In today’s society, cancer has an impact on nearly every person. More often than not, an individual can name an immediate family member or friend that has battled some form of cancer. They may have even had it themselves. Not only is the illness itself a difficult challenge to face, but there are typically residual effects to a person’s life as well. For example, young women who are diagnosed with ovarian cancer will undoubtedly have concerns about the impacts the disease and treatment will have on their fertility. This is an interesting sub-field of cancer research with enormous implications for young women, their significant others, and their families. This Microreview will examine a portion of the body of research currently devoted to answering some of the questions associated with ovarian cancer treatment and fertility impacts. Scientists and healthcare professionals continue to balance learning and developing courses of treatment for these gynecologic cancers while keeping a patient’s fertility front of mind. Studies like the ones discussed below attempt to offer some post-treatment insight into long-term effects of treating ovarian cancer.**

**Introduction**

I have selected to review articles related to ovarian cancer, its treatment, and the impact those treatments have on fertility in females of child-bearing age. It is worth stating that this topic is particularly interesting to me because my wife was diagnosed and subsequently treated for Stage 3A ovarian cancer at age 25. We are both 30 years old now (she has been in remission for four years) and are beginning to discuss growing our family. I am interested in reading scientific literature about what we should expect during the process.

Because of my experience, and my search for articles to satisfy requirements for this project, I am reminded of how little we know about the effects of some chemotherapies on fertility. The majority of studies I looked at were seeking to find out if women who had undergone fertility-saving treatment (FST) and subsequent chemotherapy were more or less likely to have fertility issues. For context, FST involves leaving at least one ovary and the patient’s uterus intact to preserve their child-bearing anatomy. This typically also involves limited or no radiation therapy exposure. Some of the studies also looked to find if there was a difference in sexual satisfaction and intimacy with significant others. The consensus seems to be that these patients can certainly have difficulty conceiving a child, but it is typically not as difficult as one might expect given the type and treatment methods of their cancer. As I mentioned earlier, this is a generally small circle of research, so definitive answers to fertility questions remain elusive.

Several decades ago, the average ovarian cancer prognosis was very poor. Fortunately, with the introduction of systemic chemotherapy - typically Bleomycin, Etoposide, and Cisplatin (BEP) - patients have seen success in finding remission for their illnesses [4]. Obviously, improvements in ovarian cancer treatment are a welcome change to the grim outcome from decades ago, but research is still being done to determine how these therapies will impact a woman’s ability to have children should she so choose.

**Recent Progress**

The most recent studies on this topic look to gather as many data points as possible and assimilate conclusions based on findings. In general, researchers are looking to understand the effects cancer treatments (and specifically fertility saving treatments) have on the fertility rates of women diagnosed with ovarian cancer. Recent studies seem to indicate a few key points. The first, is that women who have received ovarian cancer treatment are absolutely capable of bearing children [4]. More specifically, studies show that women who wish to have children were roughly ninety percent successful in achieving their fertility goals even after ovarian cancer surgeries/chemotherapy [4]. Additionally, women who have received ovarian cancer treatment are nearly just as likely to have successful IVF/ICSI procedures as their non-cancerous peers [3]. In general, the results of these studies bode well for women who are hopeful to conceive a child after their cancer treatments.

Not only was fertility evaluated in these patients, but also sexual function/desires and intimacy with significant others was considered as well. Based on a 2007 study, women who received treatment for ovarian cancer reported less sexual pleasure and lower sexual activity scores [2]. This is understandable given the anatomical and physiological changes that take place during something as traumatic as ovarian cancer and treatment. Something more intriguing though was how the same women then scored much higher when asked about cohesion and satisfaction in their relationships. According to that same study, women who underwent ovarian cancer treatment were more likely to have stronger relationships with their significant others [2].

Great progress has been made in understanding this particular area of cancer and fertility research, but more data points are necessary to continue gathering a complete picture.

**Discussion**

As mentioned earlier, research for a topic as granular as ovarian cancer fertility can certainly be limited. The scope of this topic can certainly present challenges, especially with regard to sufficient sample size and sample uniformity. Variables like age, desire for children, treatments used, survival rates and others make this a challenging area of research. However, the studies discussed above were able to collect what seems like a sufficient amount of data to reach respectable conclusions about ovarian cancer patients and their fertility outcomes.

Ultimately, families dealing with this difficult diagnosis and treatment should feel positive about their fertility options given the research available today. Studies show strong support for a family’s ability to conceive children should they so desire. This may include a need for fertility treatments and intervention, but success is still highly likely from a statistical point of view.

Research in this field continues to be published, and society should expect to know more about the effects of chemotherapy on women’s fertility as that work is published. As for my family, I feel confident in our future family planning options after reviewing the articles discussed above. I appreciate more and more the research and science being developed to better treat patients and provide therapies that offer minimal life altering side effects. I look forward to continuing to follow this field of research.

**References**

[1] Brewer, Molly, et al. "Outcome and reproductive function after chemotherapy for ovarian dysgerminoma." *Journal of clinical oncology* 17.9 (1999): 2670-2670.

[2] Gershenson DM, Miller AM, Champion VL, Monahan PO, Zhao Q, Cella D, Williams SD; Gynecologic Oncology Group. Reproductive and sexual function after platinum-based chemotherapy in long-term ovarian germ cell tumor survivors: a Gynecologic Oncology Group Study. J Clin Oncol. 2007 Jul 1; 25 (19):2792-7.

[3] Melin J, Tiitinen A, Hirvonen E, Malila N, Pitkaniemi J, Gissler M, Madanat-Harjuoja L. Probability of live birth after IVF/ICSI treatments in female early onset cancer suvivors: A finnish population-based registry study. Human Reproduction. 2021; 36(12), 3131-3140.

[4] Tamauchi S, Kayijama H, Yoshihara M, Ikeda Y, Yoshikawa N, Nishino K, Utsumi F, Niimi K, Suzuki S, Kikkawa F. Reproductive outcomes of 105 malignant ovarian germ cell tumor survivors: a multicenter study. Am J Obstet Gynecol. 2018 Oct; 219(4):385.

[5] Tangir, Jacob, et al. "Reproductive function after conservative surgery and chemotherapy for malignant germ cell tumors of the ovary." *Obstetrics & Gynecology* 101.2 (2003): 251-257.