Oncfertility: hope after cancer

A woman’s longing to have children “transcends most human desires,” says David Cohen, MD, associate professor of obstetrics and gynecology and chief of reproductive endocrinology and infertility at the University of Chicago Medical Center. Researchers and doctors in Chicago have been on the cutting edge of infertility treatments for the past few years. Here, we check up on three of the most important advancements.

“A woman’s ovarian tissue is frozen before cancer treatment. The goal could represent a breakthrough for cancer patients. In this technique, experimental technique called Ovarian Tissue Cryopreservation; it today, Dr. Woodruff leads a team that’s developing an experimental technique called Ovarian Tissue Cryopreservation; it today, Dr. Woodruff leads a team that’s developing an experimental technique called Ovarian Tissue Cryopreservation; it today, Dr. Woodruff leads a team that’s developing an experimental technique called Ovarian Tissue Cryopreservation; it today, Dr. Woodruff leads a team that’s developing an experimental technique called Ovarian Tissue Cryopreservation; it today, Dr. Woodruff leads a team that’s developing an experimental technique called Ovarian Tissue Cryopreservation; it today, Dr. Woodruff leads a team that’s developing an experimental technique called Ovarian Tissue Cryopreservation; it today, Dr. Woodruff leads a team that’s developing an experimental technique called Ovarian Tissue Cryopreservation; it today, Dr. Woodruff leads a team that’s developing an experimental technique called Ovarian Tissue Cryopreservation; it today, Dr. Woodruff leads a team that’s developing an experimental technique called Ovarian Tissue Cryopreservation; it today, Dr. Woodruff leads a team that’s developing an experimental technique called Ovarian Tissue Cryopreservation; it today, Dr. Woodruff leads a team that’s developing an experimental technique called Ovarian Tissue Cryopreservation; it today, Dr. Woodruff leads a team that’s developing an experimental technique called Ovarian Tissue Cryopreservation; it today, Dr. Woodruff leads a team that’s developing an experimental technique called Ovarian Tissue Cryopreservation; it today, Dr. Woodruff leads a team that’s developing an experimental technique called Ovarian Tissue Cryopreservation; it today, Dr. Woodruff leads a team that’s developing an experimental technique called Ovarian Tissue Cryopreservation; it today, Dr. Woodruff leads a team that’s developing an experimental technique called Ovarian Tissue Cryopreservation; it today, Dr. Woodruff leads a team that’s developing an experimental technique called Ovarian Tissue Cryopreservation; it today, Dr. Woodruff leads a team that’s developing an experimental technique called Ovarian Tissue Cryopreservation; it today, Dr. Woodruff leads a team that’s developing an experimental technique called Ovarian Tissue Cryopreservation; it today, Dr. Woodruff leads a team that’s developing an experimental technique called Ovarian Tissue Cryopreservation; it today, Dr. Woodruff leads a team that’s developing an experimental technique called Ovarian Tissue Cryopreservation; it today, Dr. Woodruff leads a team that’s developing an experimental technique called Ovarian Tissue Cryopreservation; it today, Dr. Woodruff leads a team that’s developing an experimental technique called Ovarian Tissue Cryopreservation. In 2006, Dr. Woodruff coined the term "Oncofertility" to describe what she saw as the union of two medical fields: oncology and fertility. For years, oncologists had focused mainly on each patient surviving the disease. "Oncofertility represents a focus on life after survival – specifically, an emphasis on fertility preservation for women undergoing chemotherapeutics - a key concern today as more and more women survive their cancer treatments."

Today, Dr. Woodruff leads a team that’s developing an experimental technique called Ovarian Tissue Cryopreservation. It could represent a breakthrough for cancer patients. In this technique, a woman’s ovarian tissue is frozen before cancer treatment. The goal is to be able to thaw the tissue when a woman is ready to have children, then grow her follicles into eggs in a lab so they can be fertilized. This procedure would be a huge advancement for cancer patients who want to preserve their fertility but can’t delay cancer treatment for lengthy in vitro fertilization (IVF), which can take three to six weeks. Ovarian Tissue Cryopreservation could also be useful for young women who don’t have a partner with whom to fertilize an egg for IVF at the time of treatment. So far, this technique has been successful in mice. While doing her research, Dr. Woodruff saw a convergence between her own medical advancements and the urgent need of female cancer survivors. To bridge the gap between fertility and oncology and to help women preserve their fertility without compromising their cancer treatment, Dr. Woodruff established the Oncofertility Consortium at Northwestern University. Now, the Consortium has branches at the University of California, San Diego, University of Pennsylvania, Oregon Health Science University and University of Missouri. The Consortium specializes in fertility treatment for females diagnosed with cancer. According to Dr. Woodruff, there are 1.4 million newly diagnosed cancer patients in the U.S. each year and 10 percent are in the age range of fertility.

Dr. Woodruff says she hopes the work of the Consortium is temporary. “One of my great hopes for the future is we can develop better chemotherapeutics that target the disease specifically so it doesn’t impact the gonads and ovaries,” Dr. Woodruff says. “My biggest hope is that I can get out of this business and go back to just reproduction. That would be the biggest measure of my success. I’d like to get out of my own field.”

PREIMPLANTATION GENETIC DIAGNOSIS

Preimplantation Genetic Diagnosis, or PGD, is used to screen for embryo abnormalities prior to embryo transfer with in vitro fertilization, or IVF. It involves either screening embryos for a specific disease or screening for aneuploidy (an abnormal number of chromosomes). An aneuploidy screening checks the number of chromosomes in an embryo. According to Angie Beltsos, MD, medical director for Fertility Centers of Illinois (FCI), embryos with extra or missing chromosomes in their DNA could lead to abnormalities like Down syndrome.

The goal of the PGD is to transfer pre-screened, healthy embryos into a woman. Thus, the pregnancy has the greatest chance of success and normalcy. For Dr. Cohen of the University of Chicago Medical Center, the PGD has been a “disappointment in screening” for aneuploidy. Currently, there’s no definitive proof suggesting that women who undergo PGD screenings for aneuploidy have more successful births than those who don’t, he says. “People who advocate for screening never recommended not also doing amniocentesis,” Dr. Cohen says. “That’s a red flag they didn’t entirely trust the test. We do PGD for specific diseases for people who have known problems” rather than screen for a disease that may be unknown. Still, he says, diagnostic screening, or checking for a known disease an embryo could carry, has been successful. However, PGD is a hot-button medical topic: all experts don’t agree on its efficacy.

“The current research is controversial [about] whether PGD and screening for aneuploidy could help increase the chance that a couple would have a healthy baby compared to just doing IVF and not doing the PGD,” explains Dr. Bellots. According to Dr. Bellots, FCI is one of the first clinics in Illinois to offer advanced chromosome counting technologies to seek a problematic embryo. In the past, she says, fertility experts were only able to count 10 pairs out of the 23 pairs of chromosomes a healthy person generally has. Now, they are able to screen all 23 chromosomes through two key advancements: Micro-array and Comparative Genomic Hybridization.

In vitro maturation (IVM)

In the future, IVM could offer a faster alternative to the sometimes long IVF process. Today, it’s not yet offered in American hospitals. “In vitro maturation would require fewer days of medication than IVF,” says Mary Wood Molo, MD, medical director of IVF at the Rush Center for Advanced Reproductive Care. “The intent would be to retrieve immature eggs, but then continue to mature those eggs in the laboratory. We would then fertilize those and put them back in the patient.”

IVM treatment involves three to five days of medication compared to a 10-day stimulation for IVF. Also, a woman’s ovarian size, which can change with IVM, is more easily controlled with IVM. For women with polycystic ovarian syndrome, a condition where ovaries are larger than normal, this could be a huge advantage. “There are some groups of patients where this can be very exciting, especially people with polycystic ovaries,” says Edmond Confin, MD, professor of obstetrics and gynecology at the Northwestern University Feinberg School of Medicine and director of IVM. However, he adds, “IVM is still considered a work in progress compared to conventional IVF. With current technology, we can still achieve better success rates with IVF.”

For more information on oncology, visit www.oncofertility.org. For more information on PGD, call the Fertility Centers of Illinois at 877.324.4401.

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