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A Look at the Emerging Field of Oncofertility

Dr. Sands:

Patients undergoing treatments such as chemotherapy may be at significant risk of impairment or inability to have children later in life. Impacting both men and women equally, the emerging subfield of oncofertility can help guide patients as they navigate their fertility options prior to cancer treatment.

Welcome to *Project Oncology* on ReachMD. I'm Dr. Jacob Sands, and here to share their insights on the field of oncofertility are Dr. Mindy Christianson and Dr. Suneeta Senapati. Dr. Christianson is the Medical Director at Johns Hopkins Fertility Center and an Associate Professor of Obstetrics and Gynecology. Dr. Christianson, thanks for joining me today.

Dr. Christianson:

Thank you for having me.

Dr. Sands:

Dr. Suneeta Senapati is an Assistant Professor of Obstetrics and Gynecology at the Hospital of the University of Pennsylvania. Dr. Senapati, thank you for being here today.

Dr. Senapati:

Thanks so much for having me as well.

Dr. Sands:

Starting with you, Dr. Christianson, can you tell us how cancer treatments such as chemo can impact a patient's fertility?

Dr. Christianson:

Yeah, I think it's really important for oncologists to have a discussion with patients, especially those at reproductive age, regarding the impact of treatment such as chemotherapy or radiation therapy on fertility. It affects both females and males.

And starting with females, it's important to know that females are born with a set number of eggs; the highest number of eggs that they'll have is about a million eggs when a female is born and that number of eggs decreases over time and certain chemotherapy regimens can be very damaging to the ovaries, greatly decreasing the number of eggs that a female can have. And so, after the treatment there may be very few eggs left for a female to be able to get pregnant in the future. The risk of chemotherapy really depends on the type of chemotherapy. We know that certain types of chemotherapeutic agents are more damaging to the ovaries such as what we call the alkylating agents, such as cyclophosphamide. Others are less risky. So it's really important for a patient to have that conversation with his or her oncologist regarding the risk. But it's also the dose of chemotherapy and the time that the patient's receiving chemotherapy. And then we also know that radiation is exquisitely damaging to the ovaries. And so, if a patient's receiving pelvic radiation, that can be very damaging.

For males the same conversation can proceed regarding the risk of chemotherapy. It depends on the specific agent, and also radiation can also be very damaging.

Dr. Sands:

So with that in mind, let's talk about the emerging field of oncofertility. Dr. Senapati, can you provide us with some background as to the origins of the field of oncofertility and some of what's happened in the earlier time frame of this field?

Dr. Senapati:

Sure. So oncofertility is a concept that really took off in the early 2000s when there was a need recognized that there's a particularly

vulnerable population of patients that are diagnosed with different types of cancer conditions that have specific , fertility needs and often need to access fertility care very rapidly given the acute nature of their disease processes. And so this concept of oncofertility really developed at the time and recognized the need to sort of integrate care between oncology teams, reproductive medicine, radiation oncologist, genetics, mental health professionals, bioethicists to essentially be able to provide options to these patients that may be undergoing different types of treatments that could have a substantial impact on their fertility. And really over time this, this has evolved. So initially it was patients that were accessing care for the purposes of embryo banking, oocyte banking within that also, ovarian tissue prior preservation as well as medical agents that are given to help with fertility preservation. So it's really changed over time and now just recognizing that in addition to that access of care piece, there's also very much a need to follow-up these patients with their long-term outcomes in terms of when they come back to utilize potential gametes or embryos that have been cryopreserved as well as their reproductive choices and how their reproductive narratives really unfold over time.

Dr Sands:

So staying with you, Dr. Senapati, can you tell us more about the most recent developments in the U.S. in the field of oncofertility? You discussed cryopreservation, is there anything further emerging now going forward?

Dr. Senapati:

Sure. So this is an area that has undergone continual optimization as IVF practices have evolved but also recognizing that there are certainly gaps in our understanding of the science as well as the treatments that we can offer. For example, there's a great deal of research now looking at agents that might potentially be available to give to patients as an alternative to embryo or oocyte banking. Similarly, ovarian tissue cryopreservation is something that had been considered experimental for many years and has now been gaining more traction as an acceptable method of fertility preservation in select populations. But certainly there's a lot more that needs to be optimized for these patients. Recognizing that the solutions that we have can work very well for many patients, but there are certainly scenarios where a patient may not have the time or is too sick to undergo oocyte cryopreservation, so certainly a lot more room for developing therapies.

Dr. Sands:

For those just tuning in, you're listening to *Project Oncology* on ReachMD. I'm Dr. Jacob Sands, and I'm speaking with Dr. Mindy Christianson and Dr. Suneeta Senapati about the emerging field of oncofertility in the U.S.

Now that we have an understanding of oncofertility, let's take a look at some of the challenges in the field. Dr. Christianson, you've been a part of a few different initiatives recently, including a survey to oncologists, patients, and fertility specialists to identify some areas of improvement for oncofertility counseling. What are some of your key findings, and what are some of the findings from others within the field?

Dr. Christianson:

Well, I think some of the major key findings and take-home message is that oncologists are a really important gatekeeper, they're a really important source of information for patients. When a patient has a new cancer diagnosis, there's so many things swimming in their head, so many concerns, and sometimes fertility may not be the first concern. But if a patient is not counseled about fertility, that can be a huge regret when they're in the survivorship mode. So some of the findings is that there's a very low rate of fertility counseling and fertility preservation counseling. We found at our own center that before we really started our initiative that there was like a baseline fertility counseling rate of around 37%, but after we started some initiatives, that increased to over 70%. And so one of the key opportunities is to really educate oncologists about fertility preservation options that are available.

Dr. Sands:

Yeah, that's a really important point and I can see how when patients come in and they have a new cancer diagnosis, of course we're talking about a diagnosis that is often very scary and people think about mortality and so this type of thing it sounds like can be an afterthought, but then in the survivorship timeframe, of course, it's overwhelmingly important. So of course education seems to be important. What are some other ways we can improve in this area?

Dr. Christianson:

Well, I think another key issue is access to care and insurance coverage and that's the financial piece. So fertility preservation techniques such as freezing eggs can be very costly. So if a patient had to pay out of pocket for an egg freezing cycle in the middle of a cancer diagnosis that can be very stressful as we're talking about \$10,000 or more. So it's really important to know that there's resources available for patients such as the Livestrong Foundation. There are a number of states that have state mandates for fertility preservation coverage. I'm very fortunate to practice in Maryland where we do have a state mandate so we can offer that to patients. And so it's important for the financial piece not to be a barrier to have a consultation as there may be opportunities. But I think there's definitely room for improvement. There's only a handful of states right now in the country that have state mandates for fertility

preservation coverage, and it would be great to have every state have that coverage. So that's on also big area is access to care and financial coverage.

Dr. Sands:

So for the clinicians that are listening now and I suppose actually for the public as well where this is of value, what are some good ways of finding potential resources? I heard you say the Livestrong Foundation and then state mandates; is there a way of checking whether one's state covers this or other potential resources for this?

Dr. Christianson:

Well I think the Livestrong website is a wonderful website as a resource for patients to learn more about fertility preservation options. But really the most helpful resource for a patient is to have a consultation with a fertility specialist. For instance, at our center, we will see a patient within two business days, usually sooner for a consultation, and it's really important just to know what the options are. And then we have financial counselors, we have social workers that can help the patient with resources.

Dr. Sands:

What a fantastic resource for not only the individuals but for the oncologists treating patients in that area as well to be able to refer to your clinic. Turning back to you Dr. Senapati, let's take a look toward the future. We've discussed a lot of what's going on in oncofertility and preservation at this time, but how do you think the field will further advance and what do you see coming in the future?

Dr. Senapati:

So I think that there are certainly a lot of opportunity to understand better how these patients do after they go through different types of fertility preservation treatments. The literature regarding patients coming back to utilize eggs or embryos that have previously been cryopreserved is really still developing. And being able to kind of track outcomes to be able to reassure patients or really provide counseling in terms of how that utilization process goes when they come back to utilize these therapies.

I think additionally, as Dr. Christianson alluded to, improving access to care is really just going to give patients more options, and I think really bring to the forefront just awareness about this issue so that patients are not in a situation where they feel like "oh, I had this diagnosis I was very overwhelmed, I didn't have the time to think about or the resources to think about it." So I think that as this is becoming more mainstream in that oncologists are becoming more comfortable with referrals, centers are developing interdisciplinary methods of really helping patients navigate through that initial diagnosis period. I think we're going to be able to help more patients. I also think that with the advances in research and with collaborations are in place both nationally and internationally like The Oncofertility Consortium, that's gonna allow us to really optimize care for these patients better to understand which protocols work in different scenarios based on either patient characteristics or their cancer diagnoses or their planned treatments. I think that there's always going to be again room for new techniques and new therapies to be put into place and also the need to understand better as the oncology world rapidly evolves and new agents come into play, how that then influences fertility, and patients prognoses moving forward.

Importantly, a large part of care of these patients is also survivorship. So not just that initial consultation or that initial access, but also being able to follow-up with these patients afterwards and understand their needs as time goes on. So , as oncology treatments evolve and we're seeing you know more and more success, which means that patients have more opportunities to build families in the future and I think that really understanding how that changes over time is gonna be imperative to really providing patients all the tools that they need to at least, if not fulfill their reproductive dreams, but really kind of be able to do far more than we were able to ten, fifteen years ago.

Dr. Sands:

Well, it sounds like you two are doing a lot for your communities and for referring clinicians and of course the patients. I thank you for all that you're doing, and I thank you for coming on today to share all of your insights with our audience as well.

I want to thank my guests, Dr. Mindy Christianson and Dr. Suneeta Senapati, for joining today. Thank you so much to both of you.

Dr. Christianson:

Thanks for having us.

Dr. Senapati:

Yes, thank you for having us.

Dr. Sands:

I'm Dr. Jacob Sands. To access this and other episodes in our series, visit ReachMD.com/ProjectOncology, where you can Be Part of the Knowledge. Thanks for listening.