

Scott Redding: Welcome, to The 3Ps of Cancer podcast, where we'll discuss prevention, preparedness, and progress in cancer treatments and research brought to you by the University of Michigan Rogel Cancer Center. I'm Scott Redding.

We're here with University of Michigan Rogel Cancer Center urologic oncologist Dr. Arvin George, about the progress in prostate cancer treatments and diagnosis, as well as lab discoveries that lead to, and continue to move the needle towards a more individualized approach to prostate cancer. Let's meet Arvin. He's a urologist who focuses on urological cancers with clinical interest in research around focal therapy and imaging in the management of prostate cancer. Arvin has been on staff at Michigan since 2016, after finishing a urologic oncology fellowship at the National Cancer Institute.

Now Arvin, tell us where prostate cancer diagnosis and treatment has been over the past 20 years, and where it is going.

Arvin George: Well, we've been doing the same thing with regards to prostate cancer for a long period of time. In general, a man will have an elevated PSA, he will undergo an ultrasound-guided biopsy, we're not talking again anything specific when we get a biopsy, we're just sampling different areas of the prostate. That's how we render a diagnosis. That's been the gold standard across the world. And only recently has it been changing. The last seven to eight years technology has improved significantly, specifically MRI imaging of the prostate has allowed us to see the cancer. Now that we can see it, we can biopsy it directly rather than just hoping that we sampled it on a random biopsy.

An analogy that I like to give is, and it's not the perfect example, but it's similar to a breast cancer diagnosis in that we don't randomly sample breast tissue, but rather we do a breast MRI or we do a mammogram which shows an area that we're concerned about and we directly sample that specific area. An MRI has allowed us to do that in prostate cancer now. It's helped us not only to target specific areas, but it's helped us to not miss cancers that we're concerned about which are aggressive and also it helps us avoid the diagnosis of less aggressive low risk prostate cancers that we really don't want to know about.

Scott Redding: So, with the MR fusion that you mentioned, is that something that has made it a little bit easier to diagnose prostate cancer? I know a lot of times you hear about issues with the PSA and there's too many unneeded biopsies happening because of that.

Arvin George: Yeah, so, we have used PSA as a way to guide when a man needs a biopsy, and right now we still use that as the primary way in which we guide our decision making, but MRI has really helped us in selecting which patients are most likely going to benefit from a biopsy. An example would be a man who has a rising PSA, and he has a regular prostate biopsy, and it's negative, and his PSA continues to rise, rather than doing the same thing over and over again, we can actually do an MRI and we can see a specific area that we would have otherwise missed if we had just done a random biopsy again.

Scott Redding: The diagnosis seems to be getting a lot more technology advanced, this technology either with diagnosis or even treatment for prostate cancer, did that come along when the da Vinci robot was introduced about 15, 20 years ago?

Arvin George: Well, technology has been a huge part of just moving forward with advancement on all cancer diagnosis, but the da Vinci robot did certainly make a huge difference. The da Vinci robot is a type of minimally invasive surgery which essentially allows us to magnify our field of vision, we have very precise instrumentation when we do the surgery, we can manipulate the tissues very precisely, and it makes some portions of the procedure much, much easier.

Most men have much less side effects than they would have with open surgery, and they'll go home the following morning following their operation. Nowadays, the vast majority of prostate cancer surgeries are actually via the robotic approach. The main thing to remember is that the outcomes of any type of surgery is really going to be dependent on the doctor's and surgeon's training and experience.

Scott Redding: So, surgery seems to have advanced from just open surgery. It seems to sound like there's better opportunities for less side effects with the robot because you can be more precise, are there newer technology and newer surgeries that are now becoming available for patients with prostate cancer?

Arvin George: The newest things has really been born by the ability to be able to see the cancers. And one of the new treatment options is focal therapy, which is also called partial-gland ablation. And what that is, is that you treat the cancer alone while leaving the normal prostate tissue behind. And with prostate cancer the less tissue that you treat, the less side effects that you'll experience. But also the cancer control can be effected, there aren't many long-term studies regarding focal therapy, but the early studies have been very encouraging. The effects on urinary continence are minimal, the effects on erectile dysfunction are significantly lower than either radiation or surgery. But, the important thing is that each person is different and each cancer is different. We often need to tailor the treatment to each individual. So, surgery may be appropriate for one patient whereas focal therapy may be more appropriate for another.

Scott Redding: So tell me a little bit more about this focal therapy. What does that entail?

Arvin George: Focal therapy is ultimately how we determine who is a good candidate for focal therapy is that we do imaging and we do a targeted biopsy and when it's in one specific area then we feel confident that we can just treat that area alone and get good cancer control while minimizing the side effects of treatment. There's a number of different ways to employ focal therapy. The ones that we offer currently are cryotherapy, which is freezing of the tissue to destroy it, we offer high-intensity focused ultrasound, which is using high energy ultrasound waves to generate heat within the tissue and destroy it, and also we offer gold nano-particle directed laser ablation, which essentially uses laser energy and

harnesses nano-particles to be able to really direct our treatment to the cancer specifically while trying to minimize as much of the normal tissue that we can.

Scott Redding: With the focal therapy, whether it's HIFU or the cold nano-particle that you're doing, is that utilizing [inaudible 00:07:03] technology that way, but is also using other technology involved too? Like the MR fusion, or how do you get to that finite spot of where you need to target?

Arvin George: What we do is, we take the MRI that's done, we overlay it on top of the ultrasound and essentially when we call it fusion, we're basically ghosting the MRI on top of the ultrasound. And this basically gives us the detail that we, the real high level of detail, regards to the anatomy that we see on MRI, but we get it in real time because it's linked to the ultrasound. So all focal therapies that we do are done under fusion guidance, which is MRI guidance, and, like you mentioned, it allows us to go to the right area every time with an accuracy between one to two millimeters.

Scott Redding: Arvin, there's a lot happening in the surgery area as far as new technology, what's going on in research with prostate cancer?

Arvin George: Well, research is what has and what continues to drive the discovery of these newer, less invasive, more personalized and precise treatments for prostate cancer, and also helps us understand the biology of the prostate cancer much better, and help us develop new drugs or new technologies to treat prostate cancer. Here at the University of Michigan Cancer Center we really have a world-class team, and it's rivaled by very few in the world, much less the country. And we have research that really spans the complete spectrum of prostate cancer. So, before it's even diagnosed in prostate cancer screening, to clinical trials for early prostate cancer, and identification of new genomic biomarkers to help determine what cancers are more aggressive, or to measure prognosis for prostate cancers, and even clinical trials for that advance to drug treatments for late stage prostate cancer when the cancer has spread outside of the prostate.

Scott Redding: So, Dr George, I was wondering if I've been diagnosed with prostate cancer, are my only options either surgery or radiation, or what options do I have for treatments?

Arvin George: That's a great question because we've learned now that there are some prostate cancers that don't necessarily need to have surgery or radiation and this is really from the research that has been done to help us identify which cancers are clinically significant, which means which cancers are aggressive and are likely to effect a man in his lifetime, and which cancers are not aggressive at all and can be just monitored very, very safely.

In those men who have less risky, or low risk prostate cancer, we can monitor them safely with PSA testing, imaging, and periodic prostate biopsies, and we do

that to make sure that the cancer hasn't changed. If it becomes more aggressive, or more of the prostate becomes involved then that patient may transition to a more definitive treatment option, like surgery or radiation. But it allows men to carry on with their lives without a significant interruption and we only intervene when the benefit of treatment really will outweigh the side effects of either radiation or surgery.

One of the things that we've recently started is a multi-discipline reactive surveillance clinic for prostate cancer where men are counseled by a urological oncologist with specialist training in prostate cancer, and they have a number of additional resources available to them during their visit. This includes the management of their urinary symptoms, if they have erectile dysfunction we can address that, new genomic testing, and implementing that when it's appropriate, state of the art prostate imaging, and of course MRI ultrasound guided fusion guided prostate biopsy.

In the active surveillance space there are a number of different clinical trials that are available just for men on active surveillance. And also, we try to have our patients meet with a registered dietician to really discuss the studies regarding nutritional and vitamin supplements and prostate cancer because I get that question all the time in terms of what can I do? Can I change the way I eat to help effect the cancer? That dietician can help discuss cancer fighting foods, antioxidants, and even the effect of body mass index on prostate cancer.

And while there's not a magic bullet, or those no "apple a day" dietary changes can affect overall health in profound ways with regard to high blood pressure, diabetes, cardiovascular risk, and our patients and patients in general they're not just a prostate cancer alone, they're a whole person. We really focus on managing their health as a whole person with prostate cancer managed as just part of the treatment plan.

Scott Redding: You've really kind of take that mantra of, "we're treating the whole person, and not just the cancer" and it seems like, not only in the active surveillance clinic, even in the normal treatment options.

Arvin George: Yes, absolutely. I think that we've learned over the past twenty years that it's not necessarily the right thing to just do the same thing for every single man. It's just not the right approach because there's some men whose cancers are not going to affect them, and if we do a major operation on them they will have the side effects of surgery or they will have side effects of radiation, but they're not going to get any benefit to that treatment. So, we've really realized through the research that has been done with us and among other institutions as well, that we really need to personalize our treatment to the patient.

Scott Redding: When I get to be 50 I need to start thinking about PSA and other exams to find out for prostate cancer, is there anything that I should be thinking about ahead of time, if my family member might have had prostate cancer, or another cancer for that matter?

Arvin George: Yeah, that's another great question. Just as treatment has to be personalized for the patient, screening has to be personalized for the patient. So there are some men that we know have an increased risk of prostate cancer, and an increased risk of aggressive prostate cancers. The real risk factors that we consider when making our decision making and counseling a man with regards to the risk of prostate cancer, is African-American race, because they're found to have a higher incidence of prostate cancer and more aggressive prostate cancers when found, and men with a significant family history. And what I mean by that is a first-degree relative, either father or brother with prostate cancer diagnosed early, and less than the age of 60, and also for those who have had a family member who has developed metastatic prostate cancer, or prostate cancer that has spread outside of the prostate, or any family members who have died from prostate cancer.

Scott Redding: Is it just family members who have had prostate cancer, or are there other cancers within the family that we should be aware of too?

Arvin George: There are the genetic associations with prostate cancer, there are a few. We do know that the risk is both genetic, and then likely some environmental effects as well. There has been a lot of research that has gone in to specific genetic alterations with regards to the BRCA gene, and those who have a family history of breast cancer as well, either a male with breast cancer or on the maternal side. A strong family history of breast cancer would benefit from screening.

Scott Redding: Dr George, really appreciate the time today, and the great information that we've received. Is there anything else that you think that men should be thinking about or aware of when it comes I guess that time of their life when they need to start thinking more about prostate cancer?

Arvin George: Yeah, I think that it's important not to bury your head in the sand, and I think that knowledge is power. And I think that most informed patients are the ones who are their best advocates for themselves. A lot of times we will try to offer, we will counsel men to offer what we offer to them but even though there are other options out there, so I really encourage to empower themselves by getting additional knowledge of the space.

Scott Redding: Thank you for listening and tell us what you think of this podcast by rating and reviewing us. If you have suggestions for additional topics you can send them to cancercenter@med.umich.edu or message us on twitter [@umrogelcancer](https://twitter.com/umrogelcancer). You can continue to explore the 3 Ps of cancer by visiting rogelcancercenter.org