Mayo Clinic Podcast - Dr. Robert Mutter - YouTube audio expo...

Fri, 4/23 1:02PM 24:03

SUMMARY KEYWORDS

patients, radiation, radiation therapy, treatment, proton therapy, mayo clinic, mastectomy, clinical trials, breast cancer, lumpectomy, called, proton, rob, mayo, trials, normal tissues, treat, disease, reduce, risk

SPEAKERS

Dr. Halena Gazelka, Dr. Robert Mutter, Narrator

N **Narrator** 00:01
Coming up on Mayo Clinic Q&A:

D **Dr. Robert Mutter** 00:03
And it's suggested that in breast cancer, we might actually be better off giving bigger doses each day and finishing in a shorter period of time, that that actually might be better at destroying the cancer cells, but limiting side-effects of the normal tissues.

N **Narrator** 00:17
Through clinical trials and advancements in research and technologies, breast cancer patients are seeing better outcomes with less side-effects. And one innovation being used at Mayo Clinic, is proton beam therapy.

D **Dr. Robert Mutter** 00:30
This newer technology called proton therapy is different in that regard. Protons have this ability to stop on a dime. And that's because they're charged and they have a mass, so we

can actually give them just enough energy to travel to the tissue and have them stop. And so, all that tissue behind the tumor or the target is spare of radiation exposure.

D **Dr. Halena Gazelka** 00:49

Welcome, everyone to Mayo Clinic Q&A, I'm Dr. Halena Gazelka. Treatment for breast cancer can vary widely depending on the kind of the cancer and how far it has spread. Treatment options can include a combination of surgery, chemotherapy, and radiation therapy. Radiation therapy is often used after surgery to reduce the risk that the cancer will come back, but it isn't without side effects. Research is underway at Mayo Clinic to look at minimizing the side effects and inconveniences associated with radiation therapy for breast cancer. Well, joining us to discuss this today is Mayo Clinic radiation oncologist and breast cancer specialist, Dr. Robert Mutter. Welcome Rob.

D **Dr. Robert Mutter** 01:32

Thank you, Halena.

D **Dr. Halena Gazelka** 01:33

Thanks so much for being here today. I always look forward to learning something new, and I think this is a confusing topic, how much, what kind, etc. So, I'm looking forward to learning from you today.

D **Dr. Robert Mutter** 01:45

Well, I'm looking forward to being here.

D **Dr. Halena Gazelka** 01:48

Rob, do all patients with breast cancer receive radiation therapy? And how do you decide?

D **Dr. Robert Mutter** 01:55

Well, it's great question. The best way I think to divide it is to think about patients that either have breast preservation or a lumpectomy, and patients that have a mastectomy. And so, one of the real breakthroughs in medicine came in, you know, 50, 60 years ago when there were randomized trials that compared breast conserving therapy, meaning lumpectomy versus mastectomy. And these trials showed equivalent outcomes between those two modalities, meaning a woman could preserve her breast and have the same

long-term survival as doing a more aggressive mastectomy procedure. And so, that lumpectomy procedure was combined with radiation to achieve those same results as a mastectomy. So, most patients who have a lumpectomy need radiation therapy. We do also give radiation therapy in some patients after a mastectomy as well. These are patients that have higher risk features such as having node positive disease, because we know that even after a mastectomy that does not eliminate the risk of recurrence, and so certain patients may benefit from this combination therapy approach of radiation and surgery.

D Dr. Halena Gazelka 03:03

Rob, I feel like it's very confusing how many days of radiation are selected for an individual. I've heard people receiving six weeks, so 30 radiation treatments. Now I have a friend who is going through radiation and she told me she's having 19 treatments of all things.

D Dr. Robert Mutter 03:21

Yes, this has been an area of lots of work in our field. It used to be that everyone received five, six weeks of radiation therapy. And for many years, we had the understanding that giving a little bit of radiation each day, and spreading that treatment out over multiple weeks was the gentlest on the normal tissues, and that would lead to the least side effects. But over the last decade or two, there's been a lot of research, which has kind of flipped that on its head and suggested that in breast cancer, we might actually be better off giving bigger doses each day and finishing in a shorter period of time, that actually might be better at destroying the cancer cells, but limiting side-effects of the normal tissues. So, you see many different trials have happened over the last several years looking at these shorter regimens.

D Dr. Halena Gazelka 04:12

And how much more convenient for the patient to not have to go so many days.

D Dr. Robert Mutter 04:16

And yes, that's absolutely the truth. You know, historically, many patients might elect to do a mastectomy just because they couldn't afford to be away from their work, or imagine being out on the farm during the middle of a farming season and having to give up five or six weeks of treatment. So, these innovations have been really, really exciting. Just to give you an example, I mentioned for whole breast radiation therapy, the standard used to be

five to six weeks of daily treatment. Well, we had a trial that came out last spring, which suggested that five days is just as good in terms of keeping the cancer away and also was just as safe in terms of normal tissue effects. So that's, you know, a real benefit for patients.

D Dr. Halena Gazelka 05:05

That is quite a difference. Rob, what is the difference between standard radiation therapy and this proton beam therapy? And how do you decide if a woman is eligible for one versus the other?

D Dr. Robert Mutter 05:17

Yeah, so x-rays or photons are what we've used to treat patients with radiation historically, for decades and decades, ever since they were discovered. And an x-ray is basically the same thing as when you go to get a chest x-ray. For example, these are the same, you know, particles or waves of energy, if you will, as is used there, but with therapeutic radiation, like we use for radiotherapy, these are higher energy beams, and these enable them to penetrate tissue and then head into the tumor. The thing about x-rays is they slowly attenuate through tissue. And so, we don't have the ability to really fully shape them as much as we might like. Whereas this newer technology called proton therapy is different in that regard. Protons have this ability to stop on a dime. And that's because they're charged, and they have a mass. And so, we can actually give them just enough energy to travel to the tissue and have them stop. And so, all that tissue behind the tumor or the target is spared of radiation exposure. And of course, the name of the game and what I, you know, do in radiation oncology is put the radiation where it's going to help patients, you know, avoid where it's the normal tissues, where the patients aren't obviously benefiting, and which could potentially lead to more side-effects. So, we're very excited about proton therapy, the technology to help patients, I will add, one caveat about that, is that to accelerate a proton, a proton is charged. has a mass, and that enables it to stop on a dime, but to be able to actually accelerate them fast enough to be able to treat cancer patients, that requires some heavy duty equipment. It's not the type of thing that you're going to see, you know, across the corner from 7-Eleven. These things are heavy-duty equipment, and there's only a handful of centers in North America that have this equipment. So, it comes with, you know, a bigger investment in terms of capital equipment for hospitals to consider. But we're very excited to be able to study proton therapy and to be able to offer proton therapy for patients that we think may benefit, including in breast cancer.

D

Dr. Halena Gazelka 07:33

Rob, are there any known recurrence advantages as far as decreased recurrence or survivorship advantages using proton beam versus standard radiation therapy, or is it just the ability to target the beam better?

D

Dr. Robert Mutter 07:48

Great question. So, in children, for example, we don't even have clinical trials ongoing. We've just accepted that children are more sensitive to radiation We really want to limit everything, any normal tissue exposure that we can. That's of real importance. Where there's a lot of investigation now, in both the United States as well as internationally, is asking, well what about in these other more common malignancies, like breast cancer, where we know that the extra exposures to normal tissues isn't helping patients. Can we use proton therapy in those situations, to also reduce the risk of long-term complications? The challenge is to prove that you're actually, you know, reducing long term complications, you have to be able to follow patients, treat hundreds and hundreds of patients, follow them decades, you know, until they're, you know, in their 60's, 70's, and 80's, and 90's, when they may actually develop, for example, heart disease and die of a heart attack. And so, for us to prove that there's a difference between protons and x-rays will require a lot of investment into clinical trials, you know, participation of patients, and being really thoughtful about how those trials are designed, because, you know, even small differences, obviously in terms of heart disease, and risk reduction are potentially clinically significant. But again, proving that in the context of a randomized trial may be challenging.

D

Dr. Halena Gazelka 09:18

That's really interesting. Rob, you've mentioned side-effects a couple of times. What are both the short term and potential long-term side-effects or, I guess the adverse effects, of radiation therapy?

D

Dr. Robert Mutter 09:31

The most common side-effect that patients experience during treatment is irritation of the skin. I tell patients, I asked have they had a sunburn before? Most of them in Minnesota, with their fair skin? They say yes, I have. And I say, you know, that's the most, you know, similar experiences is what I would describe what we call radiation, dermatitis. The severity of that depends on our treatment. And so, in some patients that we treat, we're actually targeting the skin because the skin could be penetrated by the cancer cells. And so, in those situations, we're giving a full dose to the skin being very aggressive. And those

patients may experience a very brisk, you know, sunburn like reaction, may blister and may be sore. The worst part can be under the arm where, you know, the arm is rubbing, and that could be tender.

D Dr. Halena Gazelka 10:21

Yes, if you've ever had a sunburn there, people can relate to that it's a very uncomfortable place to have a sunburn.

D Dr. Robert Mutter 10:28

That's right, and so having that, you know, once the radiation is over a week or two later that typically fades into almost like a suntan, and then slowly, the skin returns towards normal. But that's a nuisance. And so, we actually have a lot of innovative approaches that we have been studying at Mayo to reduce those risks. I have a colleague, Dr. Kim Corbin, who is the principal investigator of a clinical trial investigating what's called a barrier film. It almost looks like saran wrap that goes over the chest, and it seems to protect the skin from abrasion from clothes and other things like that. And it seems to really have a noticeable effect in our initial trials in terms of reducing dermatitis, or skin reactions. And so, we're studying that and in a larger clinical trial through the Alliance Oncology Group. So that's really, really exciting. The other side-effects I'll just mention briefly, that some patients might experience is a mild fatigue during treatment in the breast, or the chest might feel a little bit more swollen than typical. In the long term, radiation also has side-effects and that's where a lot of this research interest is in terms of trying to limit exposure of the normal tissues. By doing so, can we reduce the risk of these late side-effects from radiation. So, we already talked about the potential for accelerating the risk of heart disease, this is something that we pay extremely close attention to in designing our radiation therapy plans now. It used to be that, you know, doctors were perhaps paying less attention to this potential risk, because the heart can actually tolerate a fair bit of radiation acutely. But it's really what was found out after many decades of falling patients is that patients who have radiation exposure to the heart, even low doses, this can accelerate the process of atherosclerosis sclerosis, or hardening of the arteries. This is the disease that leads to heart attacks. And so, we saw it, for example, in patients that had left sided treatment, in the 60s and 70s, they had a little bit higher risk of heart disease than patients treated for the right side. So, much of what we do now is designed to limit it as much as possible, any exposure to the heart.

D Dr. Halena Gazelka 12:52

What other kind of research is going on around this Rob, or that you're working on or your

colleagues,

D

Dr. Robert Mutter 12:58

So, proton therapy is a big interest, because we can almost in many instances, nearly completely eliminate that heart exposure. And so ,that's very exciting to be able to, you know, to talk to patients, and we talk about that risk, and we say, you know, there in the past, the risk of heart disease, let's say, may have been one or two percent, based on your, you know, patient with your clinical care characteristics. By the time you're 80 years old, we can say well, with protons, we can reduce that dose down tenfold. And so, you know, we think that the risk is going to be just a fraction of that in the long term. And so, that's really been exciting to be able to study proton therapy in that context. We also have other techniques that we have been investigating and using in the clinic, you know, routinely, we treat patients often in a full inspiration. And by expanding the lungs that often pushes the heart down and away from where we want to be treating. And in some patients, it may be beneficial for them to be treated on their stomach. And so that when they're on their stomach, the breast falls away from their chest and that can often create the best angles. And so, the great thing about working at Mayo is it we have this amazing team of physicists and dosimetrists, and therapists, that help us execute these treatments and we have all the tools. We can pick the best one for each patient, whether it be proton therapy, or this this prone technique or the breath hold. We have, you know, everything available to us so we can make the best decision for each patient.

D

Dr. Halena Gazelka 14:35

That's interesting. Rob, we were talking earlier about how inconvenient it can be to have multiple radiation therapy treatments, all be it necessary at times. But how long does it take to administer traditional radiation or proton beam per episode when a woman comes in?

D

Dr. Robert Mutter 14:54

Great question. Our appointments are typically 30 to 45 minutes in length. A lot of that time is spent setting patients up. So, the beam might only be on five or 10 minutes. But a lot of this time is setting the patient up exactly like they were when they came in for their first appointment, which is a planning session. So, we do this planning session which involves a scan, then we use that scan to design a radiation plan, again, with our team, just tailored that that individual patient. And then when they come back for their treatment, we set them up the exact same way. Typically, it's with their arms kind of comfortably up almost as though they had behind a pillow, just relaxing. And we take

pictures of their anatomy of their bones on the proton side, we then look at their surface anatomy to make sure it's perfectly aligned. And then finally, we turn the beam on after all of that effort and sometimes it's a little anticlimactic, you don't you don't feel anything for the patient, you know, when you get treatment. It's just like getting a chest x-ray and that it's then it's over. And often the side-effects from radiation of patients experience like the skin irritation, that's usually something that starts to happen several weeks into the treatment. And so, the patient may go home and say, did I even get the treatment? And I have to assure them that yes, indeed, that we record that, and we executed the treatment just perfectly, we took pictures to show that's the case.

D Dr. Halena Gazelka 16:17
Well, that's interesting, Rob, my analogy to that is that I do fluoroscopically guided procedures for patients with pain. And I often tell them, it's going to take me longer to get the fluoroscope or the x-ray beam lined up the way that I want it to do this procedure than it actually will probably to do the procedure, so.

D Dr. Robert Mutter 16:34
That's exactly right.

D Dr. Halena Gazelka 16:35
Lots of prep work.

D Dr. Robert Mutter 16:37
Yes, that's true.

D Dr. Halena Gazelka 16:39
Rob, how can patients know that they are getting the right treatment for their cancer?

D Dr. Robert Mutter 16:47
It's such a great question. And I think it's something that, you know, it's difficult to quantify. But I think it's something that patients can experience when they talk with a physician, almost like engaging here with someone like you, where they feel comfortable, where they have all their questions answered, where they get a sense of the expertise of that individual that they're speaking to. In the case of Mayo like I mentioned earlier, it's a real

enormous team of experts to be able to operate these facilities, like we have and offer all the latest technologies, it really requires a wonderful team to be able to execute these treatments safely. And, so that's another part of it, how do you know, the comfort that you feel in the, in the environment where you're getting treatment, the other thing I would say is that you know, at Mayo, we're often trying to not just offer the treatment that you know, that your mom or your grandma got back in the day, you know, we're really trying to advance the field and do better for our patients. And so, an example of that, over the last several years, we've been offering patients a type of radiation called partial breast radiation, where we just treat the area around the lumpectomy cavity where the tumor was originally. And we developed a regimen here at Mayo, where we're giving the radiation in just three days. And so again, we are kind of returning back to you know when I was in training some of these patients were getting five, six weeks of daily treatment not that long ago. And now we're offering patients, you know, this opportunity for being done in just three days and heading back to their families and opportunities like that. And so, those are other things that I think really differentiate a place like Mayo Clinic, where we've really got that cutting edge and trying to constantly do better for our patients.

D Dr. Halena Gazelka 18:46

Rob, in so many areas during the pandemic, we've started using virtual visits. Does radiation oncology use any virtual visits to reach patients for consultations?

D Dr. Robert Mutter 18:56

We do. We do virtual visits routinely. I would say this has really increased in our practice as well since the pandemic started. And that's been exciting. I remember consultations with patients recently from Tennessee, for example, or other, you know, other parts of the country and where they've had an opinion locally, and they're requesting a second opinion and, you know, it may not have been feasible to get that second opinion in the past, where you know you travel up to Rochester for a one hour consultation. That may have that investment may not have been worth it, but we can have this visit and we can discuss, you know, yes would be a candidate for the short course of treatment or yes, proton therapy is a good option for you. And then we can arrange for the follow up where they come up for a planning session for the radiation and the treatment and they do it all in one, one trip. So, the virtual visits have been really been wonderful to be able to connect with patients much more easily.

D Dr. Halena Gazelka 19:52

It is a true silver lining of the COVID pandemic. There aren't too many, but that's one of

them.

D Dr. Robert Mutter 19:58
That's exactly right. It really is.

D Dr. Halena Gazelka 20:01
Well, Rob, thanks for being here today, anything else you'd like to share with our listeners?

D Dr. Robert Mutter 20:06
Well, I just wanted to mention one other area of research that we're heavily invested in. I've mentioned we're really doing much better in terms of our treatment outcomes for many patients. In fact, we're really trying to de-escalate our therapies. In fact, I mentioned that three-day course of treatment for patients with very favorable disease. On the flip side, there are patients with higher risk disease, where we really still have unsatisfactory outcomes. And I've been doing this long enough where I've had patients who I care for and have grown very connected to that present with more of what we call therapeutically resistant disease, where they've had their chemotherapy, and the disease hasn't responded well to the chemotherapy. They've had their surgery, and there's still a lot of cancer left. And we know that these patients still have very high risk of relapse. And as I mentioned, I've seen some of these patients go on to relapse even after our aggressive chemotherapy, surgery and radiation. And so, much of my lab program is directed towards trying to develop new therapies for these patients that have more therapeutically resistant breast cancer. And we're really trying to develop optimal combination therapy approaches where we're using medicines in combination with radiation to improve the efficacy of the radiation and reduce the risk of relapse. We're also interested in using radiation to try to stimulate the immune system in combination with different drugs. It turns out that the radiation can actually promote a better immune response directed at the cancer. And so, we're really studying in the lab ways of enhancing that response to better fight off the cancer. So, hopefully, what we do right now we have clinical trials available offering patients these combination therapy approaches, which seem to be quite efficacious in the laboratory in patients with resistant disease. And such, hopefully in the years ahead, we'll cure more of these patients of their disease.

D Dr. Halena Gazelka 22:10
Well, you know, here at Mayo Clinic, we have an advantage because I can just call you up and ask you something. But how do patients typically find out about clinical trials that are

available?

D Dr. Robert Mutter 22:19

That's a really great question there are, if you go to the websites, the Mayo websites, that's one way is to look online, on our Cancer Center website. The other way is to simply request an appointment with us. You know, as I mentioned, we do these virtual visits. And so, we're very happy to talk with patients and engage whether or not they'd be a candidate for example, a very short course of radiation, or if they have a more higher risk radiation type, for example, after a mastectomy and they need a more aggressive therapy, would they be a candidate for some of these trials where we're combining new drugs with radiation to try to improve treatment outcomes for patients. So, we're always happy and here to answer questions.

D Dr. Halena Gazelka 23:08

Oh, that's wonderful. Thanks for being here today, Rob.

D Dr. Robert Mutter 23:11

Thanks, Halena. It's been fun.

D Dr. Halena Gazelka 23:13

Our thanks to Mayo Clinic radiation oncologist, Dr. Rob Mutter for being here today to talk to us about breast radiation for breast cancer. I hope that you learned something today. I know that I did. We wish each of you a very wonderful day.

23:27

Mayo Clinic Q&A is a production of the Mayo Clinic News Network and is available wherever you get and subscribe to your favorite podcasts. To see a list of all Mayo Clinic podcasts, visit Newsnetwork.mayoclinic.org. Then click on podcasts. Thanks for listening and be well. We hope you'll offer a review of this and other episodes when the option is available. Comments and questions can also be sent to Mayoclinicnewsnetwork@mayo.edu.