

Proton Therapy: A new weapon in the fight against cancer
Webcast
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James Cox, M.D.

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Andrew:

Hello. This is Andrew Schorr, once again with Patient Power on the M. D. Anderson website, mdanderson.org. We're here every other Tuesday with another very important program for anybody who's concerned about cancer. And as an M. D. Anderson cancer survivor, of course, I knew, in my case coming from Seattle, that giving their devotion to what I call moving the ball forward, advancing cancer care--cancer prevention too, but certainly cancer treatment, cancer research--that they might have answers for me that might not be everywhere else or maybe even anywhere else.

Well, one area that is certainly is exemplary of that are changes in radiation for people with a number of cancers. Last summer, in other words in 2006, they opened up a whole proton therapy center. That's a whole new kind of radiation for people with a number of cancers. And one of the incredible benefits is high-dose radiation as needed or the dose that your doctors feel is right for you where it needs to be while sparing damage to healthy tissue, which traditionally has been one of the side effects of radiation over the years, the concern. And sometimes there were people who needed high-dose radiation but it would be too risky. And we're going to hear about that in a minute.

First I want you to meet one of our guests today, and that is Dr. Walter Atkinson. He is a family and cosmetic dentist from Baton Rouge, Louisiana. He does lots of things. He's a very active 58-year-old guy.

Walter, you were diagnosed with prostate cancer, and nobody wants to be diagnosed with that, and then you're presented often with an array of options. What were some of these options, and why did they not seem good to you?

Dr. Atkinson:

That's right, Andrew. First when I was diagnosed it was a little bit of a surprise to everybody, because I had not had any symptoms, had not had any indication that I had any illness at all. And the immediate recommendation was prostatectomy. That goes along with some pretty significant side effects that were not at all exciting to think about. Urinary and bowel incontinence and sexual impotence and those things. And I just wasn't too excited about that prospect.

So I looked into the other options, which included brachytherapy, which is little radiation seeds. Also cryotherapy, freezing the organ. And of course photon or

regular x-ray radiation, conformal radiation. And all of those treatments presented with varying degrees of side effects that I just wasn't looking forward to enduring. And those were the options I was offered. No one mentioned proton therapy or the existence of the therapy, and I was totally unaware of it at that time.

So I was initially presented with a pretty dim outlook at a reasonably young age of having some bad side effects. As a result, after a lot of thinking and discussion with my wife about it, I frankly had decided not to pursue any therapy at all. I was going to let the disease run its course, and I was going to enjoy my life, whatever part of it was left, and not cripple myself by having some of those bad side effects.

Andrew:

Tough choice.

Dr. Atkinson:

That's where I was after I found out that I had prostate cancer.

Andrew:

That was a tough choice. I'm sure your wife was worried sick when you're saying, Well, I'll avoid all treatment or just live with it or die by it.

Dr. Atkinson:

Well, it's a pretty harsh approach, but it depends on the individual. In my case I would not have been very much fun to be around if I had endured and suffered those side effects. And my wife began to appreciate that and understand that after a little time went by, and so we decided not to seek any treatment.

And then one day when I was working in the office one of my patients came in with a problem and said, Look, I just need you to patch this up. I'm on my way this afternoon over to M. D. Anderson to have an evaluation to treat my prostate cancer. I said what type of treatment and he said, proton therapy. Frankly, I'd never heard of it. And I just couldn't believe that there was a treatment this close to where I lived that was an option that I'd never heard of.

So I went to the Internet, surfed, got a little information. I probably read a thousand pages of information about proton therapy and the next day called the Proton Center and requested an appointment be set up there for evaluation. And in short order I was over in Houston.

Andrew:

And you had the treatment. I think it was eight weeks of treatment with the proton therapy and you had been worried with the other modalities about side effects. How has it worked out?

Dr. Atkinson:

I have had, it's almost scary, zero side effects. I have had no problems. I went through the therapy without any difficulty at all. You don't feel anything. You don't have any difficulties that are anything having to do with the protons. Now, you do have some little side effects from the delivery of the proton therapy itself, but that's very short lived, and they go away immediately. As soon as you're through with the treatment the discomfort from the rectal balloon and such goes away. And it's just not a problem at all. I've had no urinary problems and I have no bowel problems and I have no sexual dysfunction at all.

So I couldn't be happier that my cancer is well controlled. I don't expect to be having any problems with it in the future, and I'm not having any side effects. I don't know how you do any better than that. That's just about the best therapeutic result you could ever ask for.

Andrew:

Okay. I want to put this in perspective. And my dream for you, Walter, is that that's exactly the way it works out. Thank you for explaining your decision. And I know you'll have a very active life and continue to.

You know, the head of radiation oncology at M. D. Anderson is Dr. James Cox. Dr. Cox, maybe this is a good time to welcome you and have you put in perspective, why is this proton therapy a big deal? It was certainly to Walter because he believed that he could have the treatment he needed for his prostate cancer and have the least chance of side effects. I know it applies to prostate cancer, it applies to other illnesses too, and in a couple of minutes we'll meet someone with another condition where maybe this was a great answer.

But what is proton therapy and why are you excited about it?

Dr. Cox:

Thank you for the opportunity to comment. Proton therapy is a form of radiation therapy that uses a different particle, a different kind of radiation that deposits its energy in the body in a different way than x-rays or electrons, the traditional forms of radiation therapy that have been used for many years. The development of x-ray treatments over the last several years has been in the direction of focusing them more and using imaging to guide them more so that we can avoid normal tissues. But x-rays always give the highest dose close to the surface of the body, and they always go all the way through the body coming out the other side.

Protons deposit energy very differently. They go in the body with a lower dose or a lower energy and they come to a stop inside the body at a depth depending on the energy of the proton beam, and then they deposit all of their energy in a burst, and then there's no radiation beyond that. So you can focus this burst of energy at a point or a volume or a tumor within the body and have all of that energy given at

that site, and then you don't have any radiation beyond it. This permits us to spare normal structures that are close by in a way that's simply not possible with x-rays.

Andrew:

Okay. Let's meet another patient who came to M. D. Anderson, one of your patients. Suzan Shughart joins us from right by Phoenix, I guess Scottsdale, right, Suzan?

Ms. Shughart:

Yes.

Andrew:

And so in your case you were diagnosed with lung cancer, and you had surgery. You had part of your lungs removed, you had chemo, but you still needed more treatment. And this happened to be at an interesting time when the Proton Therapy Center was just opening. And so it enabled you to have additional radiation but yet spare potential damage to your heart, your esophagus and other structures that would be otherwise at risk, right?

Ms. Shughart:

That's correct. Absolutely.

Andrew:

So it sounded good to you, I guess, that you could fight the cancer but not be debilitated in that way.

Ms. Shughart:

I was familiar with proton therapy being used to treat prostate cancer, but I didn't know of it beyond that. And when it was suggested to me at M. D. Anderson that perhaps I would be a good candidate for proton therapy, and they told me that they had just opened the Proton Center at M. D. Anderson. I had not heard of that, and I had no idea that M. D. Anderson had the capability to provide proton therapy.

In talking with the doctors I really totally concurred with what Dr. Cox said, which is funny since he's a doctor, but everything that I read was exactly correct as to the delivery, that it will stop within the body. My cousin had breast cancer, and she had radiation treatment and ended up with burns on her back because it went through. And I thought, Well, when you've had two lobes of your lung removed you're a little protective of what's left.

Andrew:

Sure.

Ms. Shughart:

And it's really just everything that they had said, the higher dosage, less collateral damage, really fit in with what was the treatment that I wanted. I wanted the best treatment that there was available, and this is definitely it.

Andrew:

How are you doing now, Suzan?

Ms. Shughart:

I'm doing great. And just like Walter said, I had very few side effects when I went through proton therapy. The one that I was most concerned about, everyone said with radiation you are so tired that you just kind of drag yourself around. I had none of that. I had no pain, no tiredness. Now, I did have burns on my chest, but I'm a redhead. I get burned at the beach, so I wasn't surprised with that. And my esophagus was compromised somewhat, but definitely not to the extent that it would have been had I not been having proton therapy.

Andrew:

Good for you. Let's go back to Dr. Cox, then. So, Dr. Cox, is Suzan an example where she needed aggressive radiation therapy, and it would have been difficult to do it with other tools, but now with proton therapy you have a tool to put the cancer killing radiation where you need it and navigate around these structures or areas that you're worried about otherwise being damaged?

Dr. Cox:

The structures in the chest, the lung, the esophagus and the heart, are all sensitive to the effects of radiation. And in the past we have had to limit the doses that we give to tumors in the chest in order to avoid damage to those structures. And with the proton therapy we can give higher doses, higher doses than we've given before with x-rays, so we expect tumor control, and at the same time we are able to avoid those normal structures and limit the side effects, both short-term and long-term.

Andrew:

Well, it sounds very promising. We're going to take a short break. And when we come back we're going to hear from Dr. Cox about what types of cancer this is being used for initially and where you see it going, how people can find out more. We also want to get some perspective from Suzan and Walter, what they'd say to other patients who are investigating this. How you, even if your own local doctor, wherever you may be in the world hasn't heard about it, how you can pursue it to see does this apply to you. We'll be coming back with more Patient Power in just a minute. Stay tuned for our program brought to you by M. D. Anderson Cancer Center. We'll be right back.

Andrew:

Andrew Schorr back with Patient Power on mdanderson.org. Thanks for being with us today. You know, we have a whole huge library of really one-of-a-kind

programs to help you and your family wherever you may be in the world. Just to mention that coming up on Tuesday, June 19th we have a live webcast starting at 7:00 p.m. central on advances in the treatment of prostate cancer. And the whole schedule is there for you and all our replays on leukemia. I have--my doctor was on there, Dr. Keating, chronic lymphocytic leukemia. We have cancer prevention. Complementary medicine, integrative care. Are things that you can be doing that will work well with what they're doing at M. D. Anderson to guide you and appropriately either lowering your cancer risk or helping you through treatment, whatever. It's all there for you on the Patient Power section of mdanderson.org.

Let's get back to our program at hand, though, and that is about the new proton therapy center at M. D. Anderson. And one of our guests today is the head of radiation oncology, Dr. James Cox. He's also a professor of radiation oncology at The University of Texas M. D. Anderson Cancer Center.

So, Dr. Cox, how unique is this center for what's available today? And also help us understand what cancers you're using it for initially and where it's headed.

Dr. Cox:

Well, the center at M. D. Anderson is unique in a couple ways, partly because of the way we practice radiation oncology here. We have a very large number of patients and we have a large number of physicians, and we're able to subspecialize so that the physicians who care for the patients with cancer of the lung are not the same physicians who care for patients with cancer of the prostate or cancer of the head and neck or gynecological tumors or children. Each one of those areas has its own set of physicians that specialize only in that area.

So when we bring a tool like proton therapy and put it in the hands of those physicians who have such a high degree of specialization and who understand the nuances of the diseases that they treat, they can use those tools in exceptional ways. Then you combine that with the fact that we have colleagues in other disciplines that work hand and glove with us in the care of patients, whether it's children or whether it's thoracic surgeons or thoracic medical oncologists who work with us for tumors in the lung or any of the other disease sites, we work as teams. And those teams are extremely highly specialized. That doesn't exist anywhere else in the world.

Andrew:

That's very exciting. And just the equipment itself is fairly uncommon, too, isn't it?

Dr. Cox:

Well, the equipment is uncommon. Proton beams, once they're generated to a certain energy, behave all the same way. And the ways of accelerating them, the two common ways, are to use cyclotrons or synchrotrons. We have a synchrotron. We're happy with the fact that we can vary the energy of the beam by just what we extract from the synchrotron and that our facility is fully integrated. In other

words, everything about it is electronically linked. So if we call up a certain beam energy it automatically goes to the synchrotron, and we extract that energy from it, and we are able to move things along rather quickly and in a very efficient and careful way. We have many, many checks and balances on the safety and control systems in all of this.

So the proton beam is the same as that which can come out of other kinds of accelerators, but the integration of it with our treatment planning systems and our information systems and the way it's sent to each individual room in a carefully programmed way, that's unique also.

Andrew:

Well, good for you now. Now help us understand. We heard about prostate cancer with Walter and lung cancer with Suzan. And you mentioned pediatrics, and you mentioned other areas, head and neck you mentioned. So help us understand the cancers you are using it for now.

Dr. Cox:

The cancers that especially benefit from proton therapy are the ones that require a high dose for control of the tumor and that are either surrounded by or right next to sensitive normal structures. So they're ones that we have to give a high dose, but we can't give a high dose unless we avoid the normal tissues nearby. There are diseases that we wouldn't treat. We wouldn't do total body irradiation. Right now we're not treating cancer of the breast because we're treating the breast through and through so we don't need to stop the beam inside the breast. Doesn't mean that we're not going to use it for cancer of the breast in the future, but we're not emphasizing that at the beginning.

So tumors that we've already mentioned, also cancer of the rectum. I think we will use it for cancer of the pancreas. We're going to use it for tumors in the liver. We'll use it for tumors of the eye and the orbit. So we plan to extend or expand the indications and uses of proton therapy beyond that which has been done in any institution before.

Andrew:

What about pediatrics? I know I did an earlier program with Dr. Kleinerman, who heads pediatrics there, and also a patient who came from Tennessee, I believe, and her family heard about it, you know, the doctors knew nothing about it where she was. And she has bone cancer and where radiation would--traditional radiation would not have been a good idea but she was otherwise facing pretty extensive surgery, and so when they found out about it it seemed to be a way that this young woman could have radiation where otherwise it wouldn't have been advisable.

Dr. Cox:

That's correct. And in her case there was a special interest and emphasis because of combining radiation therapy and chemotherapy, which has not historically been

done for that kind of tumor. And one of the physicians in pediatrics, Dr. Anderson has developed a plan along with our radiation oncologists to give chemotherapy and radiation therapy, and in this case, proton therapy, together for this disease that historically has only been treated with surgery. The disease I'm talking about is osteosarcoma, a primary tumor of bones.

Andrew:

Right. Well, I want to go back to Dr. Walter Atkinson, dentist from Baton Rouge and an active man. Walter, you're pretty passionate about this. Are there some points you want to underscore for the patients or family members who are listening? Because I know in reading some of the things that Dr. Cox has written this has been an evolution in radiation and a big deal now in your 30 year career, Dr. Cox, that you have this at M. D. Anderson.

But, Walter, as an observer to this and then experiencing it for yourself, you know like back in Baton Rouge or wherever people may be listening that their physicians may not at all be familiar with it. A lot of people stop there. What would you say to them?

Dr. Atkinson:

Well, that's very true. There are physicians who are not very familiar with protons. But the biggest issue I found is that whereas as, in my case, the efficacy of treating the disease itself was about the same with all of the treatment modalities available. The difference is in the therapeutic result of the side effects profile, and that is dramatically different from my perspective. And I think as time goes on we're going to see that it is, in fact, quite significantly different.

For example the physician who is used to doing prostatectomies, or the radiation seeds, gets a good result at killing the cancer, but he's not aware of the significant difference in the side effect profile being so much lower with protons. So when I was told that, well, protons don't work any better, in a way that's true if all we're going to discuss is killing the cancer. There are a number of ways to successfully kill the cancer, but those do not carry the same therapeutic result.

And so I would encourage patients who are faced with these decisions to take it upon themselves to look deeper than the simple recommendation of what kills cancer. It's also what's your life going to be like after the treatment and in the years to come and beyond, because the therapeutic result is part of the package. I have joked and in a way say I could cure my cancer for 12 cents. A bullet in the brain will cure my cancer, but it has a really bad therapeutic result.

Andrew:

Yes, it does. Your wife would be upset with that one.

Dr. Atkinson:

It's not an acceptable therapeutic result, you see. So I look at this as a practitioner myself as let's treat the problem, but let's also treat the total patient package in the therapeutic result. And I think this is something that the people at M. D. Anderson and associated with the Proton Center are becoming keenly aware of and really are beginning to appreciate this huge value to the patient in therapeutic result.

And there's one other thing I wanted to add to Dr. Cox's comments about the precision of the integration of the electronic facility that they have. We should not overlook in any way the outstanding staff that Dr. Cox and Lina Taing have put together in treating and using this equipment to take care of the patient in a very, very empathetic and kind way. Every single person I came in contact with there was a consummate professional and very concerned about making us comfortable as patients. And that is something special.

Andrew:

Thank you so much for that comment. Really, you know, I say that about M. D. Anderson myself. I always experienced that in the care that I got.

Suzan, anything you want to say to folks, too? You had a friend who had proton therapy somewhere else, but you learned about the technology. And I guess the world works in mysterious ways and the timing. It sounds like the fact that it became available when you needed that higher dose of radiation to your chest. Maybe that's a good thing for you.

Ms. Shugart:

Absolutely. Unlike Walter, I had had a recurrence, and I was concerned because the chemotherapy had obviously not killed the cancer. I was concerned with killing the cancer and getting rid of it and had not gotten to the point where I was considering the collateral damage to the rest of my body. I just was wanting not to have cancer anymore. And when this came along where I would be able to achieve that as well as have the quality of life and the collateral damage minimized it was like, This is just heaven. I mean, really, I was just so pleased that this was available for me

And I have had people ask me if M. D. Anderson pays me to promote proton therapy, because I will talk to anyone and everyone about how wonderful it is. And I will definitely piggy back onto what Walter said. The staff, the technicians are so impressive at the Proton Center. I walked in, the first time I ever walked in, the receptionist, Cindy, said, Hi, Mrs. Shugart, how are you? We've been waiting for you. And I kind of looked around thinking maybe there was another Mrs. Shugart there that she was talking to. And I went, How did you know I was coming?

They were so prepared for me to be there. And their kindness and caring is just--it's unbelievable. I was reading the magazine that comes out, Network, and there is a thing called compassionate care. And I know Dr. Cox has talked about

this in the past. And suddenly things kind of went together in my brain. All of M. D. Anderson believes in compassionate care and it so shows.

And it especially shows in the Proton Center where they are treating a number of people, but you're never a number. You're a name. And to have that at a time when you are very vulnerable in your life is priceless. Words cannot express how wonderful it is and how well run the Proton Center is. And all of M. D. Anderson, but in particular the Proton Center. And if you have a cancer that there is a possibility--you know, the Internet is a wonderful thing where you can get on and you can learn and we can educate ourselves more so we can talk to our doctors about the options available for us.

As I say, Andrew, I happened to be in the right place at the right time, and I'm very grateful for that.

Andrew:

Yes, ma'am. Well, I'm going to wish you all the best, Suzan. And I hope we get to do another interview and talk about how great you're doing in Scottsdale--even if it's a little hot down there right now--and do that years from now.

Ms. Shughart:

Me, too.

Andrew:

And Walter, thank you for sharing your perspective.

I want to give Dr. James Cox, the head of the division of radiation oncology at M. D. Anderson, the last word. In thinking about your career, Dr. Cox, you've been at this a long time. You've seen tremendous changes in radiation oncology. And now with the staff you've worked so hard to build, physicians and--from top to bottom, the whole team that Susan was talking about. You must be really excited about what this next chapter in radiation delivery and sparing side effects and maybe expanding illnesses you can treat. You must be very excited about that.

Dr. Cox:

Well, I certainly am excited about it. And of all of the 40 years that I've been in radiation oncology there has never been a more exciting time. We have this technology that we are just beginning to exploit to its maximum. And we also have other kinds of agents, molecular targeting agents as well as these physical targeting agents. And as we learn to put them together better we will have successes that we could not have envisioned even a decade ago.

I thank Suzan and Walter for the very kind comments about my staff. We have worked very hard at that, and we have a wonderful team. I'm very privileged to be working with them and for them and be responsible for them. And we'll try even to do better

Andrew:

Dr. James Cox, head of radiation oncology at M. D. Anderson, best to you with proton therapy and all the other modalities that help too. Let's not forget those. It's what's right for individual patients. And I'm always indebted to M. D. Anderson for looking at us as individuals, what's right for us. And I know Suzan and Walter echo this.

As always, I learned a tremendous amount. Please recommend this program to a friend or family member, wherever they may be in the world. You can share it with your physician or others who may need to know about proton therapy as it's available and practiced at M. D. Anderson.

We'll be back in two weeks with our program, as we learn the latest in prostate cancer and then of course our whole library of programs is available to you at mdanderson.org/patientpower.

As always, knowledge can be the best medicine of all. I'm Andrew Schorr. You've been listening to Patient Power brought to you by M. D. Anderson Cancer Center.

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