

Melanie Cole, MS (Host): Welcome to the podcast series from the specialists at Penn Medicine. I'm Melanie Cole. And joining me, we have a panel today to discuss spinal oncology. Dr. Neil Malhotra, he's the Vice Chairman for Clinical Affairs for the Department of Neurosurgery, a Professor of Neurosurgery and the Chief of Neurosurgery for the Hospital of the University of Pennsylvania; and Dr. James Schuster, he's the Director of Neurotrauma and a Professor of Neurosurgery at the Hospital of the University of Pennsylvania.

Doctors, thank you so much for joining us today. And Dr. Malhotra, I'd like to start with you. Please provide a bit of an overview about what you and Dr. Schuster will be speaking about today. I'd like you to tell us about the field of spinal oncology, what that encompasses, and the most common types of spinal tumors that you see.

Neil Malhotra, MD: Well, Melanie, thank you so much for having Jim Schuster and myself here today to talk about this important topic. I think we should even take a step back from before spinal oncology just to talk about the advances at Penn Medicine in these last 20 years. Some of the most significant advances in cancer care have occurred at Penn Medicine with therapies like CAR T therapy to improve the care of cancer patients in general. Now, what that means is there are patients who are living much longer, and some of them living longer with cancer. When cancer grows back or grows in other sites, it commonly goes to bone and the highest volume of bone in the human body happens to be the spinal column. So, what we're going to talk today a little bit about are both cancers that start in the spinal column, but mostly cancers that spread to the spinal column from other tissues.

Melanie Cole, MS: Dr. Schuster, how is spinal oncology different from other areas of oncology? What specific challenges does it present as Dr. Malhotra was just speaking about the spine itself? Tell us about some of the specific challenges that make this such a unique practice.

James Schuster, MD: Well, the primary difference is that our goal is to protect the spinal cord and the nerves associated with the spinal cord because they do not regenerate on their own. And so, we have to be very careful in our approaches, whether it's with the surgery that we do or the radiation, because safety is key. And, you know, our goal is to preserve function. And so, that's probably the thing that distinguishes specifically spinal oncology from other types of oncology.

Melanie Cole, MS: So, Dr. Malhotra, I'd like you to tell us about the spinal oncology team at the Penn Spine Center, the work that you're doing, and how

important a multidisciplinary approach to spinal oncology is. How do you collaborate with other healthcare professionals in the management of these cases?

Neil Malhotra, MD: You just heard my partner, Jim, talk about structure and function and how the spinal column, because it encloses or protects the spinal cord, how that's different than other locations in the body. Because it's such an important location in the body and it protects that spinal cord with function in the arms and legs, it's crucial that we address the tissue as it needs to be addressed.

And so to do that, we've partnered with all of the key stakeholders that can help us deliver better care. So in our case, we built the Spinal Oncology Consortium, which is inclusive of surgeons like us, radiation oncologists, oncologists, radiologists, amongst other doctors. And we brought this team together with the idea that we can think of and develop better therapies for tomorrow's patients while at the same time developing the best way and the best approach to today's patients. And so, for example, a patient who presents today with a spinal cancer, a variety of pathologies, that patient gets the benefit at Penn Medicine, of getting an evaluation by all those specialists we just described. In fact, we do it today. We did it just a couple of hours ago on a weekly basis where we spent an hour discussing and developing a plan that delivers the best therapy to that patient to provide for the best chance to maintain their quality of life now and maximize their quantity of life.

Melanie Cole, MS: Dr. Schuster, I'd like you to expand a bit on the spinal oncology care at Penn, why you're so unique, what pathways the Penn Spine Center team has developed to guide patients with spinal cancers.

James Schuster, MD: I'll be honest, you know, Neil Malhotra has done a tremendous amount of work in the background to make this a very efficient system. But it starts at the level of radiology when our radiologists see when they're reading MRI scans and they see something that's suspicious for cancer involving the spinal column, we have a system in place that automatically alerts us so that those patients can be identified early. That then very often goes directly to our multidisciplinary weekly conference. And even before there's been contact with the patient, very often we've had discussions with the radiation oncologist, the medical oncologist, the surgeons, with regard to what would be the best approach. That really helps with the intake. With cancer, there's a certain amount of urgency to get patients in, to get patients evaluated, and get them treated in a timely fashion. And one of the things that has always impressed me at Penn is the willingness for people to go the extra mile. If I get a

call and they're like, "Can you see a patient in your clinic today?" Absolutely. If I call the radiation oncologist or the medical oncologist, it's exactly the same. So, it really is a patient-focused approach to provide excellent care in a timely fashion.

Neil Malhotra, MD: Melanie, if I could just add, I think of Jim as one of the founding fathers of spinal oncology here at Penn. And like him, there are many people who are invested in this patient population.

James Schuster, MD: Neil, that makes me seem old.

Neil Malhotra, MD: Jim, you are old. So, we've tried to gather people with such unique expertise that is something special in and of itself, that we have this group of people who have such hyper-specialized expertise, and that differentiates us from the rest of the world. But I think Jim touched on the critical thing that makes us even better. And that's that idea of delivering the best care to the right patient at the right time when they need us most.

And that's a large part of what we've done in this process. Not just gathering these experts, but thinking about how we can deliver better care to patients. So, we've fundamentally improved the timing at which a patient gets a diagnosis or delivering a diagnosis more quickly. Our patients are using the ER much less. Our patients are often seen by multiple clinicians in the same place. They don't have to come back different days. And this has all resulted in patients getting their entire course of care, a mix of surgery, radiation, and medical therapies in much less time than we've ever accomplished in the past. So, I think it's not just the experts coming together, but it's what my friend and colleague Jim said, it's the way we deliver the care, patient-centered, getting the patient in at the right time and in the right place.

Melanie Cole, MS: Such an important aspect from the patient's perspective. And Dr. Schuster, speak to the spinal oncology studies that are being conducted. Provide us some insights into some of the exciting research and advancements in this field that may impact patient care in the future. What's exciting that you're doing?

James Schuster, MD: The advantage of Neil and I, you know, we're always trying to improve what we do, you know, whether it's surgically or with adjuvant treatment. And so, there's constantly evaluating new ways to do surgery, using new techniques. For instance, Dr. Malhotra did a case just the other day where they were using carbon fiber screws to reduce the amount of artifact that you get on postoperative MRI scans so that you can better follow

patients when they've had tumors resected. Our radiation oncologists are very interested in optimizing the type of radiation that's delivered, including things like stereotactic radiosurgery, reducing toxicity, but improving outcomes.

Penn, through the Cancer Center, has many, many first and second line research trials that our patients have access to with regard to enrollment for new and exciting treatments. We have the proton beam therapy, which has become an essential part of treating many of the cancers that we see.

Melanie Cole, MS: I'd like to give you each a chance for a final thought here. So Dr. Malhotra, tell us a little bit about the future of spinal oncology at Penn. What does that look like? And is there anything else you would like other providers to take away from this very important topic today?

Neil Malhotra, MD: Well, there are a number of things that we've learned in the last 20 or so years. And first and foremost is we're doing a good job in healthcare in general of improving life expectancy and quality of life for our patients who are facing complex cancers. And that's a remarkable and positive thing. But what that's resulted in is a higher likelihood of patients at some point suffering a spinal oncology problem. And what we realize is that these problems are not simple. They need a group of experts who day to day take care of this problem so that the best treatment plan can be delivered.

And when you ask specifically about the future, well, I'll say the future is today. And the reason I say that is the example Jim Schuster just gave you of a case that he and I were fundamental in bringing this type of equipment forward. And the example goes as follows: there's a patient who we treated the last couple days, a two-day surgery, to try to get a surgical cure for a problem. It's a problem that 10, 20 years ago, the patients were not getting a cure, so they had a shortened life expectancy of maybe 3 to 5 years.

Now, because these patients have such a long life expectancy, they're going to get MRIs for the rest of their lives for 10, 20, 30, 40 years to follow and make sure there's no regrowth. So, we found a new problem. Our instrumentation was preventing us from seeing if there was anything underlying it. So, Jim Schuster was instrumental in helping to bring these special carbon fiber screws to Penn Medicine so that we could do therapies that would not inhibit the long-term imaging.

So, it's a good problem. Our patients are living long. So we need a better answer from an instrumentation perspective. And that's what we've started to do. So in that way, I'd say sort of the future is now. The long-term horizon allows us to

really look for better therapies consistently. And I just don't think anyone's going to get to better therapies without assembling teams like the one that we've assembled here.

Melanie Cole, MS: That was excellent, Dr. Malhotra. Now, Dr. Schuster, last word to you. When do you feel that it's important for other providers to refer to this very specialized field of medicine and spinal oncology at Penn Medicine? What would you like them to know?

James Schuster, MD: What I always say is if a physician runs across a case, I've always said, if something doesn't seem right, it doesn't seem right for a reason. So if something seems just not quite as it should be or out of the ordinary, I think in those cases, you know, I think it's essential to get an opinion from centers that do high volumes of these types of complicated cases.

I've always said when in doubt, I biopsy. I always want to know what I'm dealing with. And so, I think as a tertiary referral center, we're here to provide that service to the community. We're happy whether it's through direct contact or through our nurse navigators to answer questions if clinicians in the community have doubts or want some clarification. And I think that's really what I would say. If it doesn't seem right, please engage people that have a lot of experience with these things, because it really does lead to a better outcome.

Neil Malhotra, MD: And if I could just add, Dr. Schuster made the point about biopsy, even something that seems so simple as biopsy, which is in many cases simple for peripheral disease, when we're talking about the spinal column and the spinal cord, the decision for biopsy is complex, and the way it's performed is complex, it's got to be done at the right place. So if you're at a center that you're comfortable, your team can do these biopsies, then by all means seek that answer. If not, send them to us. We're happy to resolve for that because the literature shows that if not done properly, you can have what's called sampling error, where you make a mistake about what the diagnosis is. And more importantly, if not done properly, you can spread that primary disease to other tissue planes that did not have cancer in them. So, it's got to be done properly.

Melanie Cole, MS: Great information. Thank you both so much for joining us today and sharing your incredible expertise. And to refer your patient to Dr. Malhotra or Dr. Schuster at Penn Medicine, please call our 24/7 provider-only line at 877-937-PENN, or you can submit your referral via our secure online referral form by visiting our website at pennmedicine.org/referyourpatient. That concludes this episode from the specialists at Penn Medicine. I'm Melanie Cole. Thanks so much for joining us today.