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A Thoracic Surgeon's Viewpoint on Screening, Diagnosis and Treatment of a Lung Cancer Patient

Narrator:
You're listening to Medical Breakthroughs from Penn Medicine, advancing medicine through precision diagnostics and novel therapies. The following program was recorded at Penn Medicine's live event, Hot Topics for the Primary Care Provider. Your host is Dr. Matt Birnholz. Dr. Birnholz welcomes Dr. Taine Pechet, chief of surgery at Penn Presbyterian Medical Center and associate professor of clinical surgery at Penn Medicine. Dr. Pechet brings extensive experience and expertise in all areas of thoracic oncology, including advanced lung and esophageal cancers. He specializes in minimally invasive surgical techniques and is experienced in the surgical treatment of esophageal diseases and hyperhidrosis, and now here's your host, Dr. Matt Birnholz.

Dr. Birnholz:
Dr. Pechet, great to have you.

Dr. Pechet:
Great man.

Dr. Birnholz:
Thank you and thank everybody else for joining us. Since we're moving in on lung cancer specifically, that's going to be the hot topic area for us. I want to start with screening. It is the big area that obviously involves everyone at every part of the care spectrum. When we start with that, I have to ask you who should be screened? It's the most basic question, but I think there are probably involved answers to that.

Dr. Pechet:
Very much, but it's also been simplified for us, in that CMS has dictated who should be screened. It's actually a pretty reasonable approach to it, unlike many of the things that the government does. We are all waiting to see what they're going to do over the next four years. At this point, it's actually not bad, and it's what we follow. There are nuances and details. There is actually a good website, shouldiscreen.com, that everybody can go to and look at, but basically it's patients who are 55-77 years old. They should have had at least a 30-pack-year smoking history. If they've quit smoking, it should've been within the last 15 years, and most near and dear to my heart, they should be able to undergo thoracic surgery if they're found to have a cancer. That's sort of the hallmarks of it, and again, there are nuances to it, but that's sort of the way to think about it past that.

Dr. Birnholz:
Well, considering the nuances – the next question is if we are following the who, what, when, where, and why, how should patients be screened?

Dr. Pechet:
That's actually undergone a real revolution. I think most people probably know that we spent decades trying to figure out whether or not chest x-ray screening was useful and put a lot of time and effort into those, and the answer is no, it's really not. A chest x-ray is really not an appropriate way to screen if you have a patient that you're worried about lung cancer. A chest CT is the correct way. We now have, as do many other institutions, we have a lung cancer screening program where we've set it up that you order the screen as a chest CT unenhanced screening. If you're on Epic, there's a particular Epic code to order that. If you're not part of the Penn system, then you can just put in a paper order saying, "Do a screening chest CT please," and they'll figure it out. What happens with that is there is actually a nurse who runs through the patient's history in the order and confirms that it's appropriate for the screening protocols. They undergo their screening on a special machine and they try and use the same machine and the same parameters for all their subsequent scans,

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and then there is a small group of radiologists who are in charge of looking at those so that there is some continuity in it. We've also developed, similar to breast cancer findings on mammography, at Penn we develop sort of a warning sign for the ordering of the primary care physicians that gives a classification scheme of how worried you should be, a one, two, three, four kind of thing to say, "This one is trouble; you need to do something about it, or this is nonsense, ignore it, or this needs a follow up." It comes on with pretty specific recommendations about when to get the follow up.

Dr. Birnholz:
And just to clarify, when you mentioned that chest x-ray not effective – why is that? Is it that the sensitivity is too low? What has been found just to lead to that conclusion?

Dr. Pechet:
I think it's hard to say why it didn't work. In this day and age, like I said, the CT actually detects it much earlier, and so if you are looking at it from a public health perspective, of which I am not an expert in that, it's the idea of how many lives you're going to save for what cost; therefore, finding them earlier – if you find a nodule that's large enough to show up on an x-ray, it has a much higher chance of having metastasized and being a stage three or four tumor and you're less likely to add years of life for that patient. That's a little bit teleologic, but that's how it works out that CTs are the way to choose now.

Dr. Birnholz:
I see. So, why don't we move forward with that and consider the patient with imaging that uncovers a suspicious finding. What's the next action step from there?

Dr. Pechet:
So, again, I think following the radiologist's guidance they have done at Penn and if it's been done somewhere where you don't have that easy code, then you have to spend a little bit of time untangling the wording that's in there, but by and large, most primary care physicians are not experts in the nuances of what a nodule looks like and aren't going to be looking at the scan themselves, and so you need to have the patient seen by somebody who is an expert in that. There's no hard and fast rule about who that has to be. Many oncologists don't want to see patients who don't have a cancer diagnosis, and frequently, the nodules are not. Statistically, nodules are much less likely to be cancer than anything else. Pulmonologists are probably a better choice. The system that we set up at Penn has two facets. One is either through an interventional pulmonary group that has taken on the responsibility of nodule diagnostics. Probably the most favored way, there is a new program we established which is really a thoracic oncology intake program where we took one of our thoracic surgery advanced practice providers who had been seeing patients in thoracic surgery for almost 30 years – a very experienced individual – and she now sees patients as the first person. So, the call comes in; she will see the patient within 24 hours, and then gets whatever appropriate imaging is needed to make a decision, and can then say, "No, you need to see a radiation oncologist; you need to see a surgeon; you need to go see a medical oncologist, and they'll figure that out." As part of that program, it is still in the early stages. I think it has been about five or six months that we've had it up and running. Our goal is two weeks from first contact through initiation of treatment, and that's been an interesting one because it puts a lot of stress on the system. That includes getting the brain MRIs and getting the PET scans and anything else you need. That's been a challenge, and we have been able to use that goal to push administration and get more services. We're pretty happy with it.

Dr. Birnholz:
And your anecdote about the thoracic surgeon actually brings up another related question which is whether – you might be a little bit biased as a thoracic surgeon – but should all patients who receive a diagnosis of lung cancer see a thoracic surgeon?

Dr. Pechet:
The simple answer is no. The more complicated answer, of course, is it depends. If you have an extreme example where there is clearly liver metastasis, then there is no role for surgery in those patients. If it's an earlier stage or suspicious for lymph node metastasis, then, yeah, a thoracic surgeon should be involved in that. I think, by and large in this day and age, the recommendations are clear that all patients with a lung cancer diagnosis should be cared for as part of a multidisciplinary team, and that's obviously a catch phrase, but in this circumstance, it is important that patients – they don't necessarily need to see all the providers, and the way that we handle it is unless it's a very simple case where you have a 1-cm nodule that's clearly a stage 1 cancer, we don't honestly present them; we just take them out, but most of the patients will be presented and there is usually one or two dedicated thoracic radiologists; there's one or two lung cancer pathologists; there's two interventional pulmonologists who show up in our group. There's people who nothing but needle biopsies. We've got, I think, six medical oncologists who do nothing but lung cancer medical oncology, and then you've got – so we have a big group and we argue these things back and forth, and I think through that, everybody ends up getting an opinion from each of the specialties and then we sort of say, "Okay, this is where we're going."

Dr. Birnholz:

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And this is spread across all the Penn centers or is this all headquartered at Penn Medicine Hospital in Pennsylvania?

Dr. Pechet:
It's in the process of being disseminated. Right now we have a weekly meeting that's in one of the downtown hospitals and those of us who are at the main Penn campuses all participate. Two weeks ago we moved to a new conference room that has the capability of video broadcasting, and the goal is within the next six to twelve months to be able to include partner institutions and have them present and participate in it, and that's a little bit of a responsibility that we feel.

Dr. Birnholz:
Continuing along that care continuum, just going forward with that, we have the patient who is diagnosed with lung cancer going to be referred to you, what kind of tests do you want to have at your disposal that get done before the patient even comes into your office?

Dr. Pechet:
The most important thing is the actual films from the chest CT, and that's surprisingly difficult to get the patient to bring the actual disc with them, but we need to look at the pictures and then pulmonary function tests are sort of the key. Everything else becomes a little bit debatable, whether or not the patient needs a PET scan; whether or not they need brain imaging, but in general, some quantification or assessment is probably a better term of their cardiac risk status, because obviously what we're trying to figure out is, "Well, is it a lung cancer, and can you tolerate an operation?" The issues on tolerating an operation can be clarified by exercise capacity, and it's amazing, particularly in Southern New Jersey, how few people can remember walking further than their car. So, when you see the patients, if you can get them to go take a walk so that they can tell us what it is they are able to do, that's hugely important. It turns out that there's reasonable data that, despite all our fancy pulmonary function tests and other studies, the best assessment test for whether a patient can tolerate lung cancer surgery is pulse oximetry when they climb a flight of stairs. That's typically what we do. We take them out back – as you can tell, I'm not the one who walks up the stairs, one thing at a time.

(laughter)

Dr. Birnholz:
Well then, let me turn then to surgical outcomes. It's a really, really difficult question to ask because the outcomes are going to be very varied depending on the stage of the cancer when it's caught.

Dr. Pechet:
Yeah.

Dr. Birnholz:
But, how to patients generally fair after lung cancer surgery?

Dr. Pechet:
It's a fair question, in particular because so many patients come with a preconceived notion that their life is over; they have lung cancer and that's the end, and it's really not true. We have good data that's over a decade old now from national multi-institutional trials that say the mortality within 30 days for all comers, and that was a study that the youngest patient was 27 and the oldest was 91, and it was everything from a wedge resection through a pneumonectomy, the mortality was 1.38%; and so, patients actually do pretty well. You know, the downside is that 40% of them will have at least one complication, but what we run in to is really stuff that takes some massaging, but rarely has any lasting effects, and most common complications are atrial dysrhythmias; 90% of them are gone within two months. So, we mess around with their medications and we torture everybody with checking Coumadin and that kind of stuff and after a few months, it all goes away and patients really do very well.

Dr. Birnholz:
But in considering the complications and other factors, are there instances – and I'm sure there are, but again, as a thoracic surgeon, I leave it to you to say no – whether you look at radiation as a better alternative to surgery?

Dr. Pechet:
Well, also a very fair question, and the problem is as radiation therapy has evolved and, you know, we now have all kind of new computer control and we've got proton therapy, and we've tried to ask the question, and the problem is that surgery remains the standard of care, and so if you're going to look to deviate from the standard of care, you run into some equipoise issues with how you can conduct prospective, randomized trials, and in the end, it remains a standard of care, but as we look to offer surgery to people with more and more compromised lung function, we run up into trouble where oftentimes you cannot accomplish an anatomic resection, meaning you're left with what we call a wedge resection where you literally just take out a wedge of lung with the tumor in the middle, and we're getting increasing evidence that that probably is no better oncologically than radiation therapy. In those patients where we don't think we can do a segmentectomy or lobectomy or one of our other options, most of the time we will send them ourselves and say,

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"You should go talk to a radiation oncologist and get a sense." At the same time, we struggle to get everybody through an operation so we make them go out and walk and we tinker with their inhalers and that sort of stuff.

Dr. Birnholz:
Back up the stairs as it were.

Dr. Pechet:
Yeah, yeah.

(laughter)

Dr. Birnholz:
So, before we wrap up, I want to ask you a similar, forward-looking question that I asked of some of our other guests, and that is, what is new in lung care, and it can be specific to Penn, but also just in your experience and what you're seeing around you from the thoracic surgery field, what is up and coming in the lung cancer field?

Dr. Pechet:
Sure. I think that's really driven by a change in the histology of lung cancer, and it's not clear why this has come about, and I'd say, we actually have noticed a more dramatic change in Southern New Jersey than we have in our Pennsylvania patients in that the majority of cancers that we see now are adenocarcinomas of the lung and they're often of a variant that we call multifocal. This is a so-called ground-glass opacities that you'll hear them talking about on chest CT scans. It's a whole different biology and behavior, and many of these lesions will sit indolent for five or ten years whereas the other ones – and sometimes we'll have ten or fifteen of them and nine of them will stay indolent and one of them will progress to an invasive lesion that requires treatment, and it's that histology of lung cancer that we've really made the most progress in the personalized diagnostic catchphrase in that we've learned to look at the genetic mutations and we have a whole range of new lung cancer therapies. There was just a *New England Journal* article on PD-1 and the outstanding results from patients who have that mutation, and that's revolutionized stuff. On the surgical side, if you have to operate and take out one of the lesions that have become invasive, it's awfully nice to be able to take out a bunch of the other ones that are in a more indolent form. The problem is, it's very difficult to identify those. We are fortunate that one of our partners has developed a program of identification where it's basically sort of a florescent marker that the tumor specifically takes up, and we're looking at ways to use minimally-invasive techniques to identify those and resect them. That's been so successful we've now spread that technology. It goes by the acronym of the GLOWING TUMOR because everybody likes that, but it has become very useful. We're looking at it in breast, pancreas, and many other areas. So, those are the new things that are driven by the lung cancer biology and our ability to deal with those changes.

Dr. Birnholz:
Dr. Pechet, I am pleased to announce that you have brought us home very strongly. Thank you so much for your time.

(laughter)

Dr. Pechet:
Thank you, Matt.

(clapping)

Narrator:
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