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00:00:00.076 --> 00:00:21.346 Announcer Funding for Yale Cancer answers is provided by Smilow Cancer Hospital. Welcome to Yale Cancer answers with the director of the Yale Cancer Center, Doctor Eric Winer. Yale Cancer Answers features conversations with oncologists and specialists who are on the forefront of the battle to fight cancer. Here's Doctor Winer.

00:00:21.423 --> 00:00:52.500 Eric Winer Tonight, we are talking about thyroid cancer, relatively common cancer, and one that has some special features. We're joined by Doctor Adriana Ramirez, who is an endocrine surgeon and assistant professor of surgery at Yale School of Medicine. She's also the director of the Thyroid Care Ablation Program. And we'll be talking later on about what that means. Adriana, thanks so much for for joining us this evening.

00:00:52.615 --> 00:00:54.500 Adriana Ramirez Thank you for having me. It's a pleasure to be here.

00:00:54.576 --> 00:01:14.769 Eric Winer You know, I often start by just asking people to tell me a little bit about themselves, where you're from, how you got interested in being a surgeon, and in particular an endocrine surgeon and a cancer surgeon. And what it is that made you choose that that very specialized area.

00:01:14.769 --> 00:01:17.192 Adriana Ramirez I was, born in Venezuela.

00:01:17.269 --> 00:01:18.230 Eric Winer Oh, okay.

00:01:18.423 --> 00:01:40.461 Adriana Ramirez I moved to the States, when I was quite young, and I would go back every summer to visit family. And I became interested in health care, and really kind of more how health impacted the individual's potential. I guess I would say, and how really culture, biology, kind of the intersection of that was very important.

00:01:40.538 --> 00:01:56.423 Adriana Ramirez And so I actually initially thought I was into public health because of that. In my time, at Emory, I had the opportunity to do some, volunteering health fairs. And we were fortunate to be positioned right next to Emory Hospital.

00:01:56.423 --> 00:01:57.769 Eric Winer This is when you were in college.

00:01:57.807 --> 00:01:58.769 Adriana Ramirez This was in college.

00:01:58.846 --> 00:01:59.730 Eric Winer Wow. Okay.

00:01:59.807 --> 00:02:22.384 Adriana Ramirez And realized, I think, that I was very interested in the very intimate relationship of the patient doctor, experience, and being able to help an individual and a family, was a lot more meaningful to me than, you know, that kind of more minute impacts that you could have at the kind of community and population level. That said, I still went out and got my MPH eventually.

00:02:22.461 --> 00:02:41.846 Adriana Ramirez So I still like kind of that overall approach, but that kind of led me into med school. Then I decided actually, between emergency medicine and surgery. I realized that I wanted to do something procedural where I had an immediate impact, on, on a person.

00:02:42.153 --> 00:03:03.615 Eric Winer And of course, in surgery, there are lots of choices. I mean, you can do big operations in the abdomen, and or you can you can, although it's really a separate field, you know, some surgeons or orthopedic surgeons, you, chose a kind of surgery that takes a very meticulous approach.

00:03:03.692 --> 00:03:04.230 Adriana Ramirez Yes.

00:03:04.230 --> 00:03:07.615 Eric Winer There's not a lot of space in the neck where the thyroid is.

00:03:07.692 --> 00:03:28.346 Adriana Ramirez I'm glad that you, You mentioned that. Yeah. I initially went into surgery thinking I was going to do a transplant or trauma surgery. So exactly what you said kind of these big, maximally invasive. If they say, surgeries and once I actually didn't know that the field of an open surgery was an option until I was in residency.

00:03:28.423 --> 00:03:53.538 Adriana Ramirez And then as the classic story of having the mentors and the sponsors in your field, having early exposure early on in your training years, I still remember the time that my mentors had just just come to an endocrine surgery Society meeting and I walked in and I was like, oh, these are my people. They had very much the sort of detailed, like interest in kind of being an expert in a very discreet, focused area.

00:03:53.615 --> 00:04:13.846 Adriana Ramirez And I think it was a really nice balance for me to be able to operate in the neck, use more delicate instruments. I love the anatomy there. And it was a it was also a field that has a lot of multidisciplinary aspect to it. I love other surgeons, but it's nice to to have my engagement with the, medical endocrinologist.

00:04:13.846 --> 00:04:24.423 Adriana Ramirez The radiologist, the interventional radiologist in the medical oncologist. So I think that really helped kind of solidify some of my reason for going into it.

00:04:24.500 --> 00:04:50.038 Eric Winer You know, I will tell you, my, my, my son is a Euro gynecologist, and he too does very intricate, small procedures and has expressed to me that, you know, he really likes that kind of work as opposed to, you know, much bigger operations. So I hear it, occasionally, you know, from him as well. So let's talk about thyroid cancer.

00:04:50.115 --> 00:05:14.076 Eric Winer I did a little reading and, and, discovered that that thyroid cancer affects somewhere in the range of about 45,000 people in the US each year. So it's, not rare cancer. It's not the most common. Not as common, for example, as colon cancer or breast cancer. Tell us a little bit about the different types of thyroid cancer.

00:05:14.153 --> 00:05:20.884 Eric Winer There are certain types that are very, very common. And also they tend to be pretty well behaved.

00:05:21.000 --> 00:05:40.423 Adriana Ramirez I'd like to make a small caveat. Yes, it is not the most common cancer when you look at the population as a whole. But it does disproportionately affect women. So even though it's not really seen as a women's cancer, it is more common 3 to 4 times more common than in males. And so it always is in the top five.

00:05:40.423 --> 00:05:47.307 Adriana Ramirez Most common cancers for women. And actually, you know, I think it was like in 2018, it was the second most common, cancer for women.

00:05:47.500 --> 00:05:59.730 Eric Winer No, no, no, that's a that's a that's an important point. And since we're on that, why why do women get thyroid cancer? What are the. But what do we know and what's what's theorized.

00:05:59.807 --> 00:06:25.192 Adriana Ramirez That, I don't think we actually have a lot of information about, to be honest. Yeah. The risk factors that we know are associated with, thyroid cancer are fairly crude. I would say, you know, it's radiation exposure. It's certain, genetic predispositions. But otherwise, I don't think it is really known why it's more common in women than in men.

00:06:25.269 --> 00:06:43.576 Eric Winer Yeah. Because the expert, you know, the risk factors or risk factors than men. Also share. And, since we're on this issue in, in terms of difference in the the number of cancers men and women get, is there any difference in the behavior of the cancers between men and women?

00:06:43.692 --> 00:07:14.115 Adriana Ramirez There is, what we tend to find and of course, this is all generalizations. Is that men seem to present with larger tumors, more locally advanced, meaning that they've already had some sort of lymphatic spread, and potentially distant metastases. The the reason for that, I don't think is as clear. I think there is a general sentiment that men just don't go to the doctor as often.

00:07:14.153 --> 00:07:14.884 Eric Winer Sure.

00:07:15.038 --> 00:07:39.115 Adriana Ramirez They tend to have just kind of in the neck anatomy. Their thyroid gland itself tends to be a little bit lower writing. They tend to have more muscular necks, and so they are difficult to palpate until they actually are bigger. But with the incidence of essentially finding these on imaging, that's done for another reason. We are, I'm curious if we'll start be seeing less of that being a factor.

00:07:39.192 --> 00:08:03.576 Eric Winer Sure. Our listeners may mean may or may not be familiar with this, but all medical students are taught how to examine a thyroid. But the truth is, it is really hard to examine a thyroid. And most of us who aren't specialists in the area can sort of do it. But it's it's it's a hard organ to to feel it pretty easily disappears in the neck.

00:08:03.653 --> 00:08:24.807 Eric Winer And and of course, as you pointed out, in somebody who's got a big neck with a lot of musculature, it's it's even harder. So the types of thyroid cancer. So the what is the there's several different types, but fortunately the most common types are also the ones that tend to be the best behaved. So what are those?

00:08:24.884 --> 00:08:50.692 Adriana Ramirez Yeah. You can, kind of classify thyroid cancers in multiple different ways. You have well differentiated thyroid cancer and that's going to include, papillary thyroid cancer, which is the most common kind of subtype of thyroid cancer. Which I'll talk about a little bit more since it is so dominant. You have follicular, thyroid cancer as well as, acidic thyroid cancer that falls into that, those categories as well.

00:08:50.769 --> 00:09:16.423 Adriana Ramirez And then you have the poorly differentiated or high grade, but still differentiated thyroid cancers, and then followed by some of the rare subtypes like medullary and anaplastic thyroid cancer. So the well differentiated category, assuming no widely invasive features, etc., that which can also talk about two do tend to be very well behaving.

00:09:16.500 --> 00:09:33.269 Adriana Ramirez As you've mentioned, they have an excellent prognosis. We look at, patients with stage one papillary thyroid cancer specifically, and they have 99% survival rate at five years. And actually even longer than that, you can see the same thing at ten, 15 years. So we know that these are very well behaving.

00:09:33.269 --> 00:09:36.384 Eric Winer And that's with essentially surgery alone.

00:09:36.461 --> 00:09:51.192 Adriana Ramirez Depends. It's actually all together okay. For well, yes. All together for stage one the mainstay of treatment is surgery. But some of these, and increasingly a smaller percentage do also receive radioactive iodine as an adjunct therapy.

00:09:51.384 --> 00:09:57.653 Eric Winer Much difference between the papillary and follicular cancers. Or do they behave in similar ways?

00:09:57.730 --> 00:10:24.230 Adriana Ramirez There is a difference, in how, they spread. Well, obviously the cells look very different. Actually, I would say that the papillary thyroid cancers are much easier to diagnose. They tend to have more classic appearances on radio, radiology images as well as, just at the histology level. When we do our biopsies and they have, the gram aneurysm have a Braf mutation.

00:10:24.307 --> 00:10:46.807 Adriana Ramirez So we know the kind of the pathway of, of that for the follicular cancers, they are more associated with brass like mutations. And so for for them our biopsies tend to be, indeterminate. So they kind of come back as a tip here. But it's unclear like which way they're going to behave until you actually see the full capsule, which really you can't do, tell that it's all out.

00:10:46.884 --> 00:11:05.807 Adriana Ramirez So a lot of those actually tend to end up having a low back to me. And then if it's diagnosed, they may need additional surgery to remove the other side of the thyroid. And then the way they spread is also different. So, papillary thyroid cancer is predominantly, a lymphatic type spread.

00:11:06.000 --> 00:11:11.423 Eric Winer So it spreads to the lymph nodes around the thyroid gland in the neck.

00:11:11.461 --> 00:11:22.038 Adriana Ramirez Exactly. Yeah. The first place I would go is directly below the thyroid. Is level six lymph nodes. And then after that it would go to sort of the regional lymph nodes which would be the lateral neck.

00:11:22.115 --> 00:11:24.653 Eric Winer And follicular cancers don't spread to the lymph nodes.

00:11:24.807 --> 00:11:36.038 Adriana Ramirez No. They are associated with hematology in a spread. They tend to be a little bit harder to surveil. Because you can't just do our standard ultrasound.

00:11:36.115 --> 00:11:50.384 Eric Winer And, and we're going to have to take a break in just a minute. But let me just ask, quickly, how often do these cancers spread outside of the thyroid when they're diagnosed, or have already spread outside of the thyroid when they're diagnosed?

00:11:50.461 --> 00:11:55.538 Adriana Ramirez We are very, very fortunate that it is the grand minority of these.

00:11:55.615 --> 00:11:56.230 Eric Winer Yeah.

00:11:56.307 --> 00:12:03.230 Adriana Ramirez For all thyroid cancers, it is about 4%. And that includes these aggressive types.

00:12:03.307 --> 00:12:14.730 Eric Winer So for the most part it's just in the thyroid. And as a general rule, what you're doing certainly first is removing the tumor.

00:12:14.807 --> 00:12:24.461 Adriana Ramirez Exactly. But we can certainly talk about potentially for these smaller, lower risk papillary thyroid cancers. Can we get away with active surveillance.

00:12:24.461 --> 00:12:40.884 Eric Winer Yeah, we will talk about that when we come back. We will be back in just a minute. I'm here again with my guest, doctor Adriana Ramirez, thyroid surgeon at Yale School of Medicine and Yale New Haven Health System.

00:12:41.038 --> 00:13:00.192 Announcer Funding for Yale cancer answers comes from Smilow Cancer Hospital, where more than a dozen dedicated teams work across scientific disciplines to prevent, diagnose and treat specific types of cancer, from melanoma to sarcoma. Learn more at SmilowCancerHospital.org.

00:13:00.269 --> 00:13:24.730 Announcer Breast cancer is one of the most common cancers in women. In Connecticut alone, approximately 3500 women will be diagnosed with breast cancer this year. But there is hope thanks to earlier detection, noninvasive treatments, and the development of novel therapies to fight breast cancer. Women should schedule a baseline mammogram beginning at age 40 or earlier if they have risk factors associated with the disease.

00:13:24.807 --> 00:13:53.846 Announcer With screening, early detection and a healthy lifestyle, breast cancer can be defeated. Clinical trials are currently underway at federally designated comprehensive cancer centers such as Yale Cancer Center and Smilow Cancer Hospital, to make innovative new treatments available to patients. Digital breast tumor synthesis, or 3D mammography, is also transforming breast cancer screening by significantly reducing unnecessary procedures while picking up more cancers.

00:13:54.000 --> 00:14:00.692 Announcer More information is available at YaleCancerCenter.org. You're listening to Connecticut Public Radio.

00:14:00.769 --> 00:14:40.884 Eric Winer Welcome back to the second half of Yale Cancer Answers. Again, I'm doctor Eric Winer And if you're just tuning in, I'm speaking with Doctor Adriana Ramirez, who's an assistant professor of surgery at Yale School of Medicine. And we are talking tonight about, thyroid cancer. So we were just talking about the fact that, surgery is the mainstay of treatment for the vast majority of patients, but some thyroid cancers are very, very slow to change, and some may actually, I'm guessing, but I'm going to wait to hear what the expert says.

00:14:41.038 --> 00:14:59.615 Eric Winer May be overdiagnosed meaning if they we didn't know about it, they might never cause anyone a problem. So increasingly, there's talk about observing some some number of patients with thyroid cancer rather than going in and doing it. Operation. Adriana, tell us about that.

00:14:59.692 --> 00:15:43.038 Adriana Ramirez Yeah, absolutely. And so this is a topic that really actually kind of represents a paradigm shift towards really kind of personalized, risk stratified, care for thyroid cancer. The newest guidelines in 2025, actually, August of 2025, emphasize several key changes, for thyroid cancer management. One of the things they did in that is expand active surveillance. So they endorsed active surveillance as an acceptable management option for select patients with low risk papillary thyroid cancer, which is, as you can imagine, the one of the most common, not the most common thing that we see, coming, into the clinic with patients diagnosed upfront with thyroid cancer.

00:15:43.038 --> 00:16:12.846 Adriana Ramirez The data, which now out of Japan, who's been doing this the longest has as much as 30 year follow up, shows that you're you're seeing zero thyroid cancer deaths in this per patient population. Only 5% have tumor enlargement in ten years and 1% nodal metastasis. So the evidence is really quite strong to suggest that maybe these patients really don't need surgery.

00:16:13.038 --> 00:16:19.000 Adriana Ramirez I think it's important to then look at who are the patients that are okay to monitor.

00:16:19.038 --> 00:16:43.884 Eric Winer Sure. And I, I just should add that, of course, this is a paradigm shift that's going on in many different types of cancer treatment. And while we all recognize that there are still over 600,000 Americans who lose their lives from cancer every year and we still need new and better treatments, and there are many cancers that need, a great deal of treatment.

00:16:43.884 --> 00:17:15.153 Eric Winer And even with that, we we are not always successful. But there are others. And it's not just thyroid cancer, where in fact less is probably more. And that's true in some breast cancers. It's certainly true in some prostate cancers and others. So tell us in the in the world, if thyroid cancer, or thyroid cancer management, who are the patients who you can have conversations with about doing less.

00:17:15.230 --> 00:17:44.115 Adriana Ramirez Yeah. First it's really confirming that they have low risk papillary thyroid cancer. We we prefer most of the data is in patients where their primary tumor is, less than one centimeter. There's pretty good data to up to 1.5cm and then some extending that to two centimeters. But they still need to, you know, not have any kind of, aggressive histological subtypes that we know of that act more, or have a higher chance of recurrence.

00:17:44.153 --> 00:17:50.346 Eric Winer And that would be based on the pathologists interpretation of the initial biopsy. Is that correct?

00:17:50.384 --> 00:18:13.884 Adriana Ramirez Yes. Though I will say the caveat to that is that that is difficult for a lot of pathologists without more cells. So what we then really do is we, make sure that they don't have extra thyroid extension. So the cancer is not, violating the thyroid capsule, that we don't have any signs of either regional or distant, metastatic disease.

00:18:14.038 --> 00:18:26.269 Adriana Ramirez We don't like tumors necessarily close to that posterior capsule of the thyroid, because that gets very close to the recurrent laryngeal nerve. So potentially voice changes that then can't be salvaged later on.

00:18:26.307 --> 00:18:33.576 Eric Winer So if the tumor were to grow it might not be life threatening, but it might be life altering by changing someone's voice.

00:18:33.615 --> 00:18:48.423 Adriana Ramirez Exactly. So we generally yeah, avoid that or need to have a good distance between the primary tumor and that posterior capsule. And then certainly, near the airways. So not ones that are abutting the trachea.

00:18:48.500 --> 00:19:06.884 Eric Winer So when you have these conversations with people saying, gee, maybe we can just watch this. How do people react? I

imagine that some say that's fine. I don't want you doing surgery on my neck. And others probably feel a little anxious about all of this.

00:19:07.038 --> 00:19:31.807 Adriana Ramirez Yes. It is a it is a hard conversation. I think we are in, our society in general is a very kind of proactive war against cancer type mentality. And we don't have some of the, I think, cultural hesitation about, like a star appearance on our neck as some of, like our Asian counterparts, which is where all of this started in managing kind of patient concerns and anxiety about active surveillance.

00:19:31.884 --> 00:19:59.384 Adriana Ramirez I do upfront say that in active surveillance is not saying that we're going to do nothing for your cancer. It is an active monitoring plan, and we have very clear indications about when the intervention, would be needed. I really try to describe it as a more surgical delaying management plan and that, importantly, that delayed surgery doesn't worsen their outcomes compared to immediate surgery.

00:19:59.423 --> 00:20:21.076 Adriana Ramirez That's definitely been, very well proven. And there's a lot of kind of safety about, active surveillance. I think another thing that I mentioned is, you know, we know that people in active surveillance have consistently better quality of life. And that's really related to not needing thyroid hormone replacement and preserving their thyroid function.

00:20:21.153 --> 00:20:32.384 Eric Winer And so how often when you do thyroid surgery for a cancer, does somebody need hormone replacement therapy. Is it is it always or is it in a proportion.

00:20:32.461 --> 00:21:00.038 Adriana Ramirez So that gets actually to another part of the 2025 guidelines. They have now put out a kind of more strong statement of saying that we should only be doing a low back to me for, cancers measuring between 1 to 4cm versus the the guidelines in 2015 were more you may consider that option. And so although back to me is increasingly being used instead of just total thyroidectomy.

00:21:00.038 --> 00:21:22.615 Adriana Ramirez So what I mean by that is removing half of the thyroid versus all of the thyroid. When you remove half of the thyroid, the risk of you needing thyroid medication long term. I generally consult patients, and that's about a 20 to 30% risk at 15, 20 years. But it's something that can happen at the very beginning, six weeks after surgery, or it can happen at year 15.

00:21:22.769 --> 00:21:34.230 Eric Winer And why does that happen if you have half a thyroid left? I mean, it just gets tired or it's just unable to keep up. I mean, you would think that it would be okay.

00:21:34.307 --> 00:21:56.269 Adriana Ramirez Yeah. So the, the the thyroid in general, if you are, have a functional, fully functional thyroid gland, the side that is removed or the side that remains is able to compensate for the side that is removed. Some patients do have kind of predisposing factors that know that we know that their thyroid function is going to worsen over time.

00:21:56.423 --> 00:22:05.884 Adriana Ramirez For example, Hashimoto's disease and autoimmune disease that kind of destroys your thyroid tissue over time. But as you get older, your thyroid function just also declines naturally.

00:22:06.000 --> 00:22:23.846 Eric Winer And so are there patients when you can tell them about this, even, you know, when you say, you know, on average quality of life is better. But who say, you know, this is a cancer there? I don't want to keep coming back for all of this surveillance. You know, I just want to have it out.

00:22:24.000 --> 00:22:48.153 Adriana Ramirez Yeah. And I do, I do think it's important to consider patient factors. It is, I think, perfectly appropriate. After counseling, with surgery, with other team members and, kind of multi disciplinary way, that if the patient still would prefer against surveillance that, that that is a decision that we should honor.

00:22:48.153 --> 00:23:00.192 Eric Winer And finally, you know, of all the patients you see just roughly what percentage of them can consider surveillance. Is it a small minority or like a significant number?

00:23:00.269 --> 00:23:13.730 Adriana Ramirez I would say, you know, just in my patient population, which is biased. And this certainly I sure varies, from endocrine surgeon to enderman surgeon, I would say ten, 15%.

00:23:14.000 --> 00:23:31.884 Eric Winer Yeah. So, you know, a small number, but still, we're thinking back to those people, maybe we could talk a little bit about, the area that you've been very involved in, which is the various ablative techniques. So this avoids surgery typically. Correct.

00:23:32.038 --> 00:23:58.538 Adriana Ramirez Correct. So this is a technology that has been around for decades, and was recently applied to thyroid and nodules in the early 2000. It has taken off considerably in this country, I would say, just in the past five years. And I believe that we are going to see it applied more and more patients certainly are asking about alternatives.

00:23:58.576 --> 00:24:29.807 Adriana Ramirez Right now, the best data is with benign thyroid nodules. It's the primary reason these are done. And it's really for volume reduction related to symptoms or cosmetic concerns. However, it is also, able to be applied in autonomous functioning nodules. So these toxic adenomas and importantly recently there is very much an interest in also considering these for patients who would be candidates for active surveillance.

00:24:29.807 --> 00:24:42.076 Adriana Ramirez So low risk papillary thyroid cancer. And there is a rather compelling five year data, to suggest that it is certainly a safe alternative for patients in that are carefully selected.

00:24:42.153 --> 00:24:56.538 Eric Winer For patients who have thyroid cancer that has spread to the lymph nodes, or maybe even spread other places, oftentimes radioactive iodine is used. Is that something you can comment on?

00:24:56.615 --> 00:25:35.769 Adriana Ramirez Yes. So we we've really tried to narrow the use of radioactive by down to patients that are going to have a benefit, from it, which really means a reduction in the, in the risk of its recurrence. So currently we don't use it for patients whose thyroid cancers are less than four centimeters, that have some lymph node metastases or, systemic disease, evidence of extra thyroid extension, which means that they're locally aggressively acting then would also be another indication for the use of radioactive iodine.

00:25:35.846 --> 00:25:37.461 Eric Winer And does it work? Well.

00:25:37.538 --> 00:25:51.423 Adriana Ramirez It does for certain types. It works very well in that differentiated thyroid cancer group. It does not work well with medullary anaplastic. Of course that circuit is kind of their own separate category. But those poorly differentiated ones also don't.

00:25:51.500 --> 00:26:01.423 Eric Winer Even for patients who have thyroid cancer in these in these favorable groups, when it spreads, they can often do well for many years or indefinitely.

00:26:01.461 --> 00:26:12.115 Adriana Ramirez Yes, absolutely. Even even patients with pulmonary Mets, which is the most common location for thyroid cancer, can have stable disease for years and years.

00:26:12.192 --> 00:26:40.346 Eric Winer Yeah. And so, just as we end, you know, overall, all of these, you know, 45,000 patients every year with thyroid cancer, many more women than men. As as you pointed out, what's the what's the likelihood someone's ever going to have their life threatened by by cancer, by thyroid cancer? Of these 45, how many deaths a year?

00:26:40.423 --> 00:26:42.615 Adriana Ramirez Yeah, less than 1%.

00:26:42.807 --> 00:26:55.461 Eric Winer Less than. So it's really you know, this is this is one of these cancers that, you know, you have it. And, you know, in the vast majority of cases, people are going to go on and lead a normal life.

00:26:55.538 --> 00:27:14.653 Adriana Ramirez Yes. Once we're reviewing the past with patients, I try to be very reassuring. I tell them, okay, you have a diagnosis of thyroid cancer, but you're not going to die from your thyroid cancer. And most likely, my most important next goal is now, how do I get you back to that quality of life that you were enjoying before your surgery?

00:27:14.730 --> 00:27:31.884 Eric Winer Sure. Well, this is this has been great. We're going to have to wrap up. Adriana, thank you so much for joining us. It's really just, a pleasure. And, I know I learned a lot about thyroid cancer, and I'm sure our listeners, too. So thanks for being with us.

00:27:32.038 --> 00:27:33.384 Adriana Ramirez Thank you for having me.

00:27:33.461 --> 00:28:16.307 Announcer Doctor Adriana Ramirez is a professor of surgery at the Yale School of Medicine. If you have questions, the address is CancerAnswers@yale.edu and past editions of the program are available in

audio and written form at YaleCancerCenter.org. We hope you'll join us next time to learn more about the fight against cancer.. Funding for Yale Cancer Answers is provided by Smilow Cancer Hospital.

00:28:16.384 --> 00:28:16.653 Announcer