MINIMALLY INVASIVE RADIOGUIDED PARATHYROID (MIRP) SURGERY
TAMPA GENERAL HOSPITAL, TAMPA, FL
Broadcast June 14, 2005

NARRATOR

00:00:18:00 Patients suffering from parathyroid disease have a new choice for treatment. The procedure offers the highest cure rate and is the least invasive of all parathyroid operations. During this live webcast, Dr. James Norman will perform, over the internet, a minimally invasive radioguided parathyroid surgery from Tampa General Hospital in Tampa, Florida.

JAMES NORMAN, MD

00:00:40:00 The new procedure usually takes an average of around fifteen minutes. Virtually all of our patients are done through a one-inch incision, sometimes a little bit less than one inch. Now, instead of spending a day or two in the hospital, the patient goes home about one hour later.

NARRATOR

00:00:55:00 At any time throughout this program, you may email questions to the physicians by clicking the MDirectAccess button on the screen.

JAMES NORMAN, MD

00:01:08:00 Hi, my name is Dr. Jim Norman. Welcome to Tampa General in Tampa, Florida. Welcome to our live surgery. We’re going to show you a minimally invasive radioguided parathyroidectomy today. During the procedure, you’ll have an opportunity to email questions in to us and at the end of the operation I’ll sit down and we’ll look at some of your questions and we’ll answer those questions. As I said, my name’s Jim Norman. I’m an endocrine surgeon here at Tampa General, where I do all of my procedures. The procedure we’re going to do today is a minimally invasive radioguided parathyroidectomy, which we call a MIRP procedure. This is a procedure we do for patients with hyperparathyroidism. That’s the disease we treat. It’s a disease of the parathyroid glands. What’s going to happen today is we’re going to go through a little bit of a slide presentation for about five or six minutes and talk about this disease and talk about this particular patient. Then we’ll go to the x-rays and we’ll look at this particular patient’s x-rays. And then you’ll see a little bit of a film from a previous out-take we did...
a few days ago. And then, at that point, we’ll start the operation. The operation usually takes somewhere between thirteen, fifteen, sixteen minutes. For this particular patient, it will probably take about fifteen minutes for this operation and you’ll get to see the entire operation and everything we do. And then after that, I’ll sit down and look at some of your questions.

00:02:38:00 Minimally invasive radioguided parathyroidectomy is an operation that we developed a few years ago. It is a simple, outpatient procedure to cure hyperparathyroidism that utilizes radioactive tumor localization—we’re going to localize the tumor using a probe—and assessment of individual parathyroid gland hormone production in real time. In other words, we can use the probe to tell us which glands are making lots of hormones and which glands are normal.

00:03:07:00 Parathyroid disease—everybody’s got four parathyroid glands. Parathyroid glands are small glands on the back of the neck. There’s four of them. We all have them. It runs the calcium in our body. Parathyroid disease happens when somebody has a disease in one of their parathyroid glands, usually it becomes a tumor and this causes people to get sick. It’s an uncommon disease, but it is more common than we know. It’s underdiagnosed a lot. As I mentioned, most of the time people have this disease, it’s due to one bad parathyroid gland. 98% of the time, these patients have one bad parathyroid gland, three normal glands. If you find the one bad parathyroid gland, you remove it, you cure the patient, they feel much better. Women are more common than men and the hallmarks of this disease are high calcium levels and high parathyroid hormone levels. Parathyroid glands control the calcium. Parathyroid glands are out of control, the calcium in your blood’s out of control.

00:04:05:00 For the disease, again, hyperparathyroidism, high calcium in the blood causes symptoms. The symptoms are different from patient to patient, but virtually all patients have symptoms. Very few patients are asymptomatic, no symptoms. Even those who think they are, once they get it fixed, they feel remarkably better. The most common symptoms are chronic fatigue, tiredness, they become cranky, irritable, don’t have much energy to do anything, and the family members say they feel like they’re getting old and not doing anything anymore. The resolution of symptoms following the surgery is often dramatic, sometimes completely life-changing within a couple of days of the procedure. Some of these patients have a tremendous change in their life. Most of these patients will get osteoporosis. They’ll all get osteoporosis over time, but most of the patients that I see, by the time they’ve had this disease for a few years, they develop osteoporosis. The parathyroid gland makes too much hormone, the hormone takes the calcium out of the bones, puts the calcium in the blood, the high calcium in the blood causes symptoms, the loss of calcium in the bone causes osteoporosis. This kind of osteoporosis is 100% reversible.

00:05:18:00 There’s only one treatment for parathyroid disease and that’s surgery, surgery to remove the bad parathyroid gland. Once you remove the bad parathyroid gland, it’s very uncommon to get this disease again. Once cured, almost always cured. The surgical outcome for this disease is very dependent upon surgeon experience. Those
surgeons with less experience have a less better outcome than those surgeons with much more experience and the reason is there are four parathyroid glands, sometimes you don’t know which one it is. And we’ll talk about that a little bit more in a few minutes.

00:05:52:00  The surgery for parathyroid gland, there’s two concepts. Number one, you’ve got to find the bad parathyroid gland and number two, you’ve got to make sure it’s the one that’s making all the hormone. So, if we look at my slide here, step one: locate the offending gland. Find out which one’s bad. The problem is, it’s the most variable anatomy in the entire human body. You have four parathyroid glands, there’s left and there’s right, there’s uppers and there’s lowers and they can be very deep by the spinal cord or very superficial up near the thyroid gland. So to find these bad parathyroid glands, you can make a big incision and search and dissect the entire neck and operate. That’s the old-fashioned way of doing this operation. Or you can use a probe—and that’s what we’re going to talk about today—these little probes—we’re going to make that tumor jump out. We’re going to make the tumor radioactive, we’re going to use a little probe to find that tumor and so that’s the first concept about this, to let technology help us do this procedure.

00:06:53:00  The second concept here—remember the first concept is locate the bad parathyroid gland—the second concept is to remove the bad gland and then make sure that’s the one that’s causing the disease. There’s two ways you can do that. You can dissect the neck and look at all four parathyroid glands and then take biopsies of all of them and look at them under the microscope and make sure that they all look normal or abnormal under the microscope. You can also wait a little bit, a half hour or so after the operation when you think you’ve removed the bad parathyroid gland and you can take some blood out of the patient’s neck and measure the hormone and see if you can get a drop in the parathyroid hormone levels in the blood. A much easier and much simpler and actually a much more accurate way to do it is to let the probe tell us which bad gland is the bad gland and when the patient’s cured. We can take the gland out and we’ll show you that today. We’ll take the bad gland out and we can measure the amount of radioactivity that’s actually contained in that gland and we’ll let the computer tell us if the patient’s cured because the amount of radioactivity in the gland correlates to how much hormone it’s making. So the computer will tell us if this patient’s cured. We also can look at all the other parathyroid glands, put the probe on them and it will tell us if those parathyroid glands are making any hormone either.

00:08:23:00  Again, the procedure we’re going to look at is radioguided parathyroidectomy. It’s radioguided because we gave a patient radioactive material to make the tumor radioactive and then we use the little Geiger counter here to find the radioactive tumor. We developed this operation here about ten years ago and we’ve been doing it ever since. Again, the two most important concepts with this particular operation is use the probe to help find the tumor and that way we can make a small incision, in one inch or less sometimes, we use much less anesthesia, less dissection, usually the operation is fourteen, fifteen minutes, a lot less complications, and the patient is home in an hour instead of spending a couple of days in the hospital with a big incision. The other concept is we use the probe to determine how much hormone each gland is producing,
the amount of radioactivity contained in that gland is dependent upon how much ATP are
being produced by the mitochondria. I’m getting a little technical here for the physicians
that are watching the operation, but that’s how it works, the tumors become radioactive
by the degree of mitochondria and the mitochondria activity they have in each cell and
that’s what our computer will calculate. It does it with such accuracy that the probe can
help us determine the difference between an adenoma, a hyperplastic gland and a normal
parathyroid gland.

00:09:58:00 Our data here: 100% of our patients are minimally invasive. We don’t do
any of the old-fashioned operations. We do sixty of these operations every day, we do
about a thousand of them a year. The operation is usually done through an inch or less.
We get asked this every day: patients with negative scans are treated no different because
of some of the techniques that we use and we’ll show you some of those techniques. We
have essentially zero hospital admissions in the last several years. Every patient gets to
go home in an hour or so; hour and ten, fifteen minutes is average. And we’ve had no
complications. As you’ll meet in a few minutes, I’ve got a great team. We’ve done many
of these. And our cure rate by doing this short, simple, fourteen-fifteen minute operation
is almost 100%. Our cure rate is about 99.7 or 99.8%.

00:10:52:00 Today’s patient, I think this is my second-to-last slide, today’s patient is a
55-year old female. She came here from California. We have patients come from all over
the country to have their surgery here. This patient came from California, flew in
yesterday and she’ll be flying home tomorrow. Typical symptoms: chronic fatigue,
irritability, her husband says she’s cranky, decreased memory, recent onset of high blood
pressure, she’s developed osteoporosis at an early age, her calcium levels are classically
elevated at 10.5 to 11.5, it’s been elevated for about five years, her parathyroid hormone
levels are about double the upper limit of normal, about 117. Very typical, she’s a very
typical patient, looks like most of our patients here. She’s had two sestamibi scans. The
sestamibi scan is the scan that I’ll show you in a minute where we can make the tumor
radioactive. She’s had two of those scans done locally at her hospital in California. Both
of those were read as negative. They were read as negative because of poor technique
used, the scans were done by people who don’t do them very often and you end up with
poor quality scans.

00:12:04:00 If anybody wants more information, obviously you can go to
parathyroid.com. As a disclaimer here, this is a patented procedure and both the probes
and the technology is licensable. Right now, I’m going to hand off my probe and we’re
going to go look at this particular patient’s x-rays. We’re going to use this probe during
the operation, so they’ll get it ready for me.

00:12:27:00 This is the scan of our patient here today. When we do these scans, we only
scan for about fifteen minutes and that’s it. We don’t scan for hours. We just simply don’t
need to. This is the patient’s head and neck and shoulders. Here’s the patient’s shoulders
and head. Their eyes are up here. These hot spots up here are salivary glands. So we’re
going to ignore all that stuff. All we’re interested in is what’s happening in the neck.
Sometimes these tumors can be in the chest and you can see her chest is completely
empty so she’s got no tumor in her chest. The important thing here is that there’s a butterfly. The butterfly is the thyroid gland and there’s a little dark spot right there, that’s her parathyroid. So the thyroid is very normal. Again, it looks like this. Her scan looks like this. This is thyroid, thyroid, very normal. And then the parathyroid tumor. Here, we’ve taken another picture. Because we rotate the camera, it looks like this. Thyroid, thyroid and the parathyroid tumor is here. This last one is thyroid, thyroid and the parathyroid tumor is over here.

00:13:53:00 That happens because the parathyroid tumor is deep to the thyroid gland. So it’s as if we’ve taken a camera like this, it takes a picture of a thyroid, a thyroid and the parathyroid tumor is behind here. Now we take the picture from side to side and the little parathyroid tumor rotates out of phase with the thyroid gland so that’s why the tumor looks like it’s moving in the neck. It moved from next to the thyroid to in between, now it’s over here. That’s because it’s deep. When we look at these pictures down here, you can see again the hottest, or the brightest spot, in this patient’s neck is that tumor. We’re going to be able to put our probe in there. We can make a little, small incision here. The old-fashioned operation would be an incision like this. We’re going to make a little teeny incision that’s only about this big and we can use our probe to go into her neck and it will show us where that hot spot is so we can dissect right to that tumor.

00:14:58:00 Right now I’m going to go scrub up my hands so I can get ready for the operation and I’m going to let you watch a short video that we shot a few weeks ago about more of these scans and then when you come back here, we’ll start the operation.

00:15:16:00 The patient comes here, they get injected in their arm, we take a couple of pictures, the tumor becomes radioactive. As I’ll show you in a minute, the thyroid becomes radioactive and other things become radioactive, but once you get oriented to what the picture shows, you can see that it’s very clearly where the tumor is. We know ahead of time, pretty accurately, where the tumor is. Then we use these tools in the operating room to help find it and then we use it to make sure that the patient’s cured by measuring the radioactivity in the tumor. The probe isn’t just used to find the tumor, it’s used to tell us when the patient’s cured. So we don’t have to measure hormones in the operating room, we don’t have to measure calcium in the operating room. All those things take time. We don’t have to get frozen sections and look at it under the microscope. This does it instantaneously in seconds.

00:16:09:00 So when the patient comes here to the nuclear medicine department, they get these x-rays. If you look at this x-ray, I’ll explain to you how these look. This is a picture of the patient’s head. Here’s their head and their shoulders. Their ears are here, their eyes are here. These are salivary glands and everybody’s got salivary glands so we’re going to ignore that. So basically, what we’re going to do is we’re going to ignore everything in their head and just look in their chest and in their neck. This butterfly is the thyroid gland and below that, right there, is the parathyroid tumor. Here, again, thyroid gland, butterfly. If the butterfly is the thyroid gland, that’s the parathyroid tumor.
This is a similar patient here. And, again, we’ll look at these hotspots in the neck up here. In the head, these are salivary glands so we’re going to ignore those. The parallel spots, the butterfly, that’s the thyroid gland and this is the parathyroid tumor. So we can see on every single thing here, that’s the parathyroid tumor right there.

Look at another one here. Patient’s shoulders and their head. The butterfly is the thyroid gland, parathyroid tumor.

Again, these are salivary glands. We’re going to ignore them. In the middle, that is her thyroid gland. It looks beautiful, it’s perfect. Symmetrical thyroid, parathyroid tumor. See, her parathyroid tumor is about as big as her thyroid gland. That parathyroid tumor is about the size of a golf ball.

Again, we’ll ignore these spots up in her head. Symmetrical thyroid gland, and up there, this particular patient has a parathyroid tumor way up there. The old-fashioned operation was a big operation across the entire neck like this. You had to search the entire neck to try to find the tumor. We can make a little teeny incision right there and our probe will show us right where that tumor is.

Hi, welcome back. In the meantime, I’ve gotten all dressed and ready for the operation. I want to, before we start, introduce you to my team. I’ve got a team here that’s done thousands of these operations with me and they’re very good. Millie, Chanel, Carol and Melissa. They’ve done many of these operations with us and they help me be good.

Some orientation, where we are here. This is our patient’s neck, her head is up here, her nose is right about here, her feet are down this way. Her collarbones are right here, this is her Adam’s apple, so her collarbones are right about here. This is her collarbone. So we are going to make an incision right about here and make a nice little curve. Curves look a little bit better than straight incisions. You’ll see most of this operation is a pretty bloodless operation. Usually essentially bloodless, completely bloodless, very little blood. The first thing we’re going to do is find the appropriate tissue levels. If we stay in the right tissue levels, stay in the right tissue planes, it’s going to be a pretty much bloodless operation and that, of course, makes it easier to do the operation because you can see the beautiful anatomy of the neck. Of course it makes things nice and easy for the patient as well.

You’ll see that the skin is very stretchy here in the neck. The important thing that people always ask me, other surgeons ask me is if the tumor’s on the right side—like hers is going to be on the right side—then why don’t I make the incision on the right? The answer is we always make the incision in the middle because if you stay in the middle of the neck there’s very little bleeding and from the middle of the neck you can see everything. You can see the entire thyroid, you can see all four parathyroid glands if you need to. Through this incision we can see all four parathyroid glands if we need to, we can actually take out a thyroid nodule. About 20% of people will have some
small bump or nodule on their thyroid that we can address during the operation. We can do all that through this teeny little incision.

00:22:24:00 Again, there are several layers of muscles in the neck that we need to go through. We’ve gone through one layer already and here’s the second layer here. In a minute we’ll show you the third layer of muscles.

00:23:14:00 In just a minute, I’ll show you the different layers of muscles in the neck. Patients always ask me how come they can’t feel it. If they’ve got a tumor in their neck, how come they can’t feel it. My answer to them is, “You have a spinal cord in your neck, too, but you can’t feel that.” It’s even harder to feel the thyroid gland. The answer is, the parathyroid tumors are very soft. They take on the shape of their surrounding structures. They’re very soft and they just become the shape of whatever’s around them. The other reason is because they’re deep. They’re behind—there’s one layer of muscle, here’s the second layer of muscle and here’s the third layer of muscle—so the parathyroid tumors are behind the skin, a layer of fat, a couple layers of muscle, the thyroid. So they’re buried in there. Big green.

00:24:48:00 Here is—we can see a nice shot of this—this is her thyroid. Give me a pickup. Two pickups. This is her thyroid gland. This is the right lobe of her thyroid. The middle of her neck is right here and so this is the right lobe, this is the bottom half of her thyroid gland. The other part of her thyroid gland is right over here. This is the bottom half of the thyroid, so now that we’ve got her thyroid exposed—again, this is a beautiful, normal thyroid gland. This is exactly what it’s supposed to look like. One of the things that we do in this operation, we’re not just interested in taking out the parathyroid tumor. While we’re in there, we want to make sure that the thyroid looks normal, that the thyroid doesn’t have any problems, that there’s no lymph nodes, that there’s no thyroid cancer. If there’s any nodules in the thyroid, we can biopsy those. We’re not just interested in the parathyroid, but we’re interested in the whole patient and the thyroid as well. So this is a very normal thyroid gland.

00:25:47:00 At this point, we’re going to go ahead and use our probe. It’s going to tell us where to start dissecting. It’s going to tell us whether we need to dissect deeper or more superficially. It’s going to tell us to go up or down, left or right. This is going to tell us where to go. This is the same probe that you saw a few minutes ago except this particular probe now has been wrapped in a sterile sheet. This probe takes numbers and it makes noise. The patient is radioactive—go ahead and turn it up—that’s good. The patient’s radioactive so I can point this at the patient and the patient’s radioactive. I point it at myself and I’m not radioactive, I don’t think. I’m not radioactive, but the patient’s radioactive. As we saw from the x-rays a few minutes ago, the most radioactive part of this entire patient is that tumor in her neck. We’re going to put this in here and our probe is going to give us numbers, which we can calculate, it’s going to calculate numbers for us. And it’s also going to give us a noise so I can look at the patient and listen to it. So you’ll hear a noise and see the numbers.
We can see that most of her neck is around this amount of radioactivity, if you will. You can see by looking at the numbers, it’s about 1500-1550 counts per second. Are you guys showing the box? Okay. Now we start probing this and as I move this, in her neck, you’ll see that it will—somebody’s calling me on my cell phone—as we move this around in the patient’s neck it will start telling us where to dissect. That’s much more radioactive than this. I want you to show me in her neck, show me move the probe and show me the numbers, if you can. You got that? All right. So this tells me that I have to dissect there, not there. There, not there. There, not there. So that’s where her tumor is, right there. The advantage, of course, there, is I don’t have to operate throughout the entire neck. I don’t have to explore all over the place and fiddle with all the nerves and big arteries and veins that are in her neck. I want to go directly there. So, give me a Kitner, a couple Kitners. I’m going to go right where that probe told me to dissect and I’m going to carefully dissect, dissect, dissect and lo and behold, there’s the tumor, right where it said it was going to be. I don’t know if you guys can see that. Can you see? Give me a pickup. Here’s the thyroid gland. I’m going to pull the thyroid over and there’s the tumor. Can you see that? So that’s the tumor. Give me the probe again.

Just to make sure that I’m doing the right thing here, we’ll put the probe on it. Here’s the probe here and I’ll put the probe on the tumor, so that’s it. All right. Give me a big green. A parathyroid gland is best thought of like a grape. It’s the size and shape of a grape, typically. That’s an average parathyroid gland, it’s the size and shape of an olive or a grape. A normal parathyroid gland is the size of a grain of rice, but if they develop a tumor, they grow and they become the size of a grape or an olive. I tell my patients to think of a parathyroid tumor as a grape, it’s got one stem. As I dissect this out, I’m going to find its one stem, I’m going to pick it up on its stem, I’m going to put a little teeny clip across its stem—its stem, of course, being a little artery and a little vein—put a clip across that and then I’ll remove the entire tumor. So this patient, therefore, will have three parathyroids left. She has three spare parts. In other words, she’s going to have three left and I’m going to take the bad one completely out.

This is very typical as well, here. The tumor, it wants to come out. If you do the right dissecting and get next to it, it’s ready to come out and you’ve just got to help it out. See how red it is? Can you appreciate that? Very red and it’s very vascular, as all endocrine tumors are. My head might be getting in your way, but—

Kitner. Sorry about sticking my head in the way a few times, but I need to be able to look. I’m sure the patient doesn’t mind. Then again, I’m simply, at this point, dissecting out until I find the stem, if you will, of the grape. As I pick it up, it wants to bleed a little bit, because that’s what they do. Kitner. (inaudible) Kitner. This is the most delicate portion of the operation because there’s nerves to the voice box and there’s all sorts of important things in here that we want to be careful of. Give me a small clip. And give me a (inaudible) And give me a Kitner. Pull this over. And there’s our tumor. I’m going to show you, this is the tumor. This is what’s making her sick. What you’ll—I’m going to get rid of the white, that may be too hard. Can you see that good on the blue background? All right. So this is the tumor that was making her sick. It’s decreased a
little bit in size already. As soon as you cut its blood supply, it bleeds out its blood supply and it shrinks a little bit. It was a little bit bigger in her.

00:34:19:00 But now what we’re going to do is we’re going to measure the amount of radioactivity again in this thing. If it was a normal parathyroid gland, a normal parathyroid gland in this particular patient is dormant and won’t have any radioactivity at all. In this one, we’ll be able to measure the amount of radioactivity in the tumor and by computer, we’ll calculate how much radioactivity is in this tumor, compare it to the dosage of the radioactivity that we gave her and how high her parathyroid hormone levels are and then we’ll know with about 99.9% accuracy that she’s cured. Here I’m going to measure the amount of radioactivity. That’s good, leave it up. So you can see my fingers aren’t radioactive, but the tumor is. So, this was a very radioactive tumor and by these calculations, this patient’s cured. I can tell you 100% this patient is cured of her disease.

00:35:25:00 Now we don’t need to do frozen sections. They’re not cancer, this is not a cancer disease, this is a hormone disease. So we’re done. We don’t need to do any other calculations or any other procedures on this particular patient, given her pre-op scan and our findings here. We know she’s cured.

00:35:46:00 Now I can show you another parathyroid gland quickly, show you what a normal parathyroid gland looks like. Pick up. Right angle. Give me a clip. Pull. (inaudible) She has a little nodule on her thyroid here that I didn’t like, a little bump on her thyroid that I didn’t like so I removed it. Given all that information, I’ll quickly show you—right angle—a normal parathyroid gland and we’ll get on our way. Right here is a normal parathyroid gland. Here’s a nice little normal parathyroid gland, right there. They’re very small and yellow. This is a normal parathyroid gland right here. Hard for you to see, but this thing here is a normal parathyroid gland. That’s a normal size of a parathyroid gland. Obviously a big difference between that and her tumor. Given all that information, she’s cured.

00:37:17:00 If you wanted, we can show you that we can biopsy that particular parathyroid gland. In fact, let me do that. Give me a pair of scissors. I’ll just show you, here’s a biopsy of a little piece of her parathyroid gland. That’s a normal piece—I don’t want to take too much, that’s about one-fourth of that gland. We don’t want to take too much, we can kill it. But, again, we can measure the amount of radioactivity and if it was a big parathyroid gland—you see that’s very little radioactivity. Sorry, you want to get that? So that’s a normal parathyroid gland. We can take out a normal parathyroid gland, take a biopsy of it, measure the amount of radioactivity in that and if it’s a hyperplastic gland—it’s a little technical here—but if it’s a hyperplastic gland it measures differently than a normal gland which measures differently than an adenoma. By having done many, many thousands of these and seeing ten thousand specimens or so, we can tell whether this patient’s cured or not and what her other parathyroid glands are doing.

00:38:36:00 Having said all that, given this particular patient’s scan findings, given the fact that she’s got at least one normal gland, the one normal gland is physiologically dormant—it’s doing nothing—let’s get ready to close—given the fact that we took an
adenoma out and the computer tells us that she’s cured, then we’re going to go ahead and close. This patient is cured of this disease and we can move on. Yeah, I have background.

00:39:29:00 That’s a right upper parathyroid adenoma. We didn’t do much, we didn’t do a whole lot of operating here, so we don’t need to do a whole lot of sewing to close it, but all the sutures we use are absorbable sutures. When the patient goes home, you’ll see in a few minutes, all we’re doing is putting a little teeny band-aid on there—that’s good. We glue the band-aid in place and they get to shower starting tomorrow. Anything they want to do, there’s no limitations on their activity. This lady will go home in about an hour, an hour and ten minutes. She can go out and have a nice dinner with her family. I tell her she can’t drive today, but other than that, she can do anything she wants to do today. And as of tomorrow, she can do anything she wants to do, no restrictions whatsoever. She leaves the band-aid on for a week. In one week, she just peels the band-aid off. There are no stitches to take out. The wound heals up very nicely. In two or three months, it will be a little, teeny wound that nobody can see. Stitch.

00:40:58:00 No, we’re good, nurse.

00:41:06:00 (Nurse) Do you want me to start counting?

00:41:14:00 Yeah, you can go ahead and count, but—

(counting)

00:41:23:00 We’re simply putting together the layers of muscles that we went through to get in here. All these tissues will dissolve.

00:42:21:00 Since it’s a wound right in the middle of her neck, we’re going to close it like a plastic surgery-type closure. We make sure that it goes together very pretty and you’ll see the suture that we use is thinner than a human hair. You can’t see it and it’s absorbable. She’ll have a very nice wound. In a couple months when this is done, she’ll have a very nice little wound that nobody will ever see. You see this suture is so small it’s even hard to see.

00:43:35:00 Get your steri-strip ready.

00:43:59:00 One of the important things to remember about this operation is that the probe is much better at finding the parathyroid tumor than the big x-ray machine that they use in the x-ray department. Even patients with so-called negative sestamibi scan can still have a little teeny mini-operation and go home in an hour. Every one of our patients has a mini-operation.

00:45:00:00 Her incision is not much bigger than my thumb. My thumb can hide her entire incision, that’s how big it is. Not much bigger than my index finger. Now we’re going to put a little—we glue this band-aid in place. This band-aid gets to stay here for a
week. In one week, she peels the band-aid off and that’s it. There’s no stitches to take out and it’ll be a beautiful little wound when it’s done. And that’s it. All right?

00:45:46:00 I’m going to come over here and answer some questions from email. Thank you very much, team. My team’s going to—thank you very much, team—take the patient out here to the recovery room and I’ll come over here and answer some questions.

00:46:36:00 As mentioned before, there are opportunities on the screen that you’re watching to click and send an email to us, so take the opportunity now because we’ve got about fifteen minutes, fourteen minutes to answer some email questions for you. Go ahead and use that little click button there and send in a question to me and we’ll answer it.

00:47:07:00 Here’s a question here: is there a quarantine time for the patient since they are being injected with radioactive material? The answer is no. The radioactivity that we use is the most benign of all radioactive materials. The patient has no quarantine time at all. As a matter of fact, you see how close I am to that patient. I stand right next to them and I’m touching those patients all day long every day. I’m monitored for radioactivity and it’s such low doses it’s nothing. The patient gets to go home immediately after. Radioactivity is a non-event.

00:47:48:00 There’s a question here: is this minimally invasive surgery available for thyroid lumpectomy? It depends on the surgeon. There are some surgeons that are very good at this, and can do a thyroid through a very small incision. But this is mostly a parathyroid surgery, we’re not talking about thyroid surgery. Again, however, a lot of patients with parathyroid disease will have a thyroid nodule or a thyroid problem. If we can take care of a thyroid problem at the same time we’re taking care of a parathyroid—again, even if we take out a thyroid nodule, the patient’s going to go home in an hour or so.

00:48:30:00 Here’s a question: does an elevated calcium level always accompany the elevated parathyroid hormone level? Is that necessary to diagnose parathyroid disease? Parathyroid disease classically is associated with a parathyroid tumor, as you saw, which makes too much hormone. You take the patient’s blood and you measure and they’ve got parathyroid hormone in their blood. The parathyroid hormone goes to the bone, takes calcium out of the bone. You measure the calcium in their blood, the calcium is high. So classically, a patient with this disease will have high parathyroid hormone levels and high calcium levels. But not always. That’s about 95% of the time. 5% of the time or so, patients will have really good kidneys and they pee out a lot of their calcium in their blood, so that most of their calcium is not in their blood anymore, it’s in their urine and those patients get lots of kidney stones. It is possible for a patient to have normal calcium levels, have high parathyroid hormone levels, have this disease, but they almost always have kidney stones.

00:49:39:00 How large is the parathyroid tumor and what’s the largest I’ve ever seen? I’ve seen many thousands of parathyroid tumors and it’s always amazing, they’re all
different. That one you saw today was about average, maybe a little bit smaller than average. Average is about the size of a grape or an olive. That one was about the size of an olive. I’ve seen them as big as a lemon, very uncommon. Remember, these are very slow-growing tumors, so if somebody has a tumor the size of a lemon, they’ve had it for twenty years and their doctor somewhere was missing something. Sometimes they’re as small as a—I’ve seen people get very sick with a tumor the size of a pencil eraser. It doesn’t really matter so much as the size of the tumor, as how much hormone it’s producing. Usually, but not always, the bigger ones produce more hormone. But the size of the tumor does not correlate with how sick a patient is.

00:50:41:00 That’s the next question here, how high does the calcium levels have to be before you get this disease treated? The bottom line is calcium is very central to our bodies. God has made it so that calcium runs the electrical system of our nervous system and it runs the muscles of our body and, of course, it makes our bones hard. Therefore, calcium is controlled tighter in our bodies than any other element in our bodies. It’s never normal to have a high calcium. Let me repeat that: never normal to have a high calcium. If you have a high calcium level, you’ve got a bad parathyroid gland almost always. It’s possible that it’s one or two other really rare diseases. But in general, if your calcium is high, you’ve got a parathyroid problem. People don’t like having a high calcium levels, it makes them feel bad. So if you’ve got a calcium that’s high, you probably have a parathyroid tumor. Getting it fixed will make you feel better.

00:51:47:00 Another question. My endocrinologist is recommending parathyroid surgery for me. I’m 75 years old. He’s recommending surgery provided the parathyroid tumor can be localized on a scan. What precautions should I take in choosing or agreeing to the proper surgeon? That’s the most important question. Obviously I can’t operate on everybody with this disease, nor do I want to. The key is finding a surgeon who’s done a lot of them. The difference in results between surgeons who do one of these operations per week and the results of a surgeon who does one of these every six months is dramatic. So that’s the key. You want to find a surgeon who does a lot of these. It’s not an uncommon disease so you might have to look a little bit. They’re out there and you can find them. Please make sure that you get a good surgeon.

00:52:44:00 Here’s a question: do you biopsy all the parathyroid glands at the time of surgery? Does this affect the functionality of the glands? I have been told that they are extremely delicate and may become dormant if messed with too much. That is an excellent point. The old-time operation where you have a large incision, you find all four parathyroid glands, you biopsy all four parathyroid glands, those patients are kept in the hospital for a couple days because they have a high chance of getting low calcium levels. We have to be very careful with it. That’s one of the advantages of this. We can find the parathyroid glands if we need to, put the probe on it and the probe measures the amount of hormone that they’re making instead of looking at it under the microscope. That way we don’t have to mess with them, they survive, they don’t become dormant. Therefore the patients can go home right away. We don’t ever have low calcium levels with our patients.
Here’s a question: should I take any medications to decrease bone loss while waiting for parathyroid surgery? An example is Fosamax. There are several really good drugs for osteoporosis: Fosamax, Actonel, Evista and these are really wonderful drugs for the average post-menopausal female who has osteoporosis of being a post-menopausal female. Those drugs do not work in patients with parathyroid disease. The parathyroid hormone is way too powerful and if you’ve got a parathyroid tumor, taking Fosamax or Actonel will do nothing for your bones. You will still lose bone density. We have a paper that will be published shortly looking at 3,000 patients with this so I can emphatically say Fosamax or Actonel, those are great drugs, but they do not work if you have a parathyroid tumor. The tumor must come out.

Here’s a question: does the clip that you use to clamp the artery and vein cause a problem for future MRIs? No, these are little titanium clips and they have nothing to do with MRIs. It’s of no instance. As you saw, the clip we use is very, very small and being that it’s titanium, it has nothing to do with MRIs. So that’s not an issue at all.

Here’s a good question: are there any long-term effects from the radiation used to mark the tumors? Can this type of surgery be used for other endocrine tumors? This is a very safe—it’s the safest radioactive substance that we use in hospitals. It’s gone within hours. Every hospital does these scans on a daily basis. These are not any kind of dangerous things. The half-life is hours so within a few hours this patient doesn’t have this drug in him anymore. Regarding this type of radioguided surgery, yes, we can use radioguided surgery for other things. Radioguided surgery is used commonly now for breast and melanoma, looking for lymph nodes. Minimally invasive surgery, radioguided surgery for lymph nodes of the breast and melanoma is commonly being done. This is a relative to that, although done differently. I want to make a really important point here for any of the surgeons or endocrinologists out there that are watching. The probe that we use is a very different probe than what’s used for melanoma and breast. Use of a melanoma probe or a breast probe with parathyroid disease will not work and it’s not possible to use it. You have to have a special probe, this is a probe that we’ve developed and it works.

Question: Is there a recommended upper age limit for a parathyroid patient? Is there a significantly higher risk for a patient in their 80s versus patients in their 50s? The answer to that is simply no. If you have a minimally invasive operation, especially an operation like this which takes—you know, if we didn’t fool around here, we could have done this operation in nine, ten, eleven minutes. We operate in patients in their 80s, even in their 90s on a weekly basis, patients in their 80s on a weekly basis. They go home an hour later. We treat them absolutely no different than patients in their 20s. This is extremely safe. We don’t admit anybody to the hospital, whether they’re in their 50s or 80s, they go home. If you’ve got this disease, get it fixed. It can change your life. This simple operation will change your life because hormones are very, very powerful things.

Let me find some more questions here. Here’s a question from an endocrinologist: all surgeons that I know of will only do a mini-parathyroid operation if the patient’s sestamibi scan is positive. What do you do differently that allows you to do mini-surgery in every patient? A couple things different. First of all, we’ve done more
We do several thousand of these a year and we’ve developed a number of techniques that allow us to do an entire scan, done by my team here, it usually takes only twelve to fifteen minutes. We don’t spend hours scanning these patients. Our positive rate is 98-99% so most patients who come to us with scans have had negative scans. Like this patient had two negative scans and yet you saw our particular scan that we did was a beautifully positive scan. Most of the time, almost all of the time these patients will have a single adenoma and a scan done correctly will be positive. Even if it’s negative and even if a patient whose got known foregland disease like an MEN syndrome or familial hyperplasia, even those patients can be done through a small mini-incision. Again, the probe is much more sensitive and more accurate than a scan is and what the scan shows is sometimes irrelevant. Using one of our parathyroid probes is so accurate in finding these glands and the fact that we’ve done this so many times makes this very simple and easy. We do a mini-surgery on every single patient.

00:59:28:00 One more question, I think, and we’re getting towards the end. From another doctor: don’t you worry about hypocalcemia in these patients? Shouldn’t you keep them in the hospital and monitor their calcium? Again, the old way of doing this operation is that you made a large incision, you identified, manipulate and biopsy the other glands—we touched on that a little while ago—that when you do that, those patients, those other parathyroid glands stop working for a while and those patients you need to keep in the hospital for a few days because they’ve got no parathyroid hormone for a few days and therefore they get hypocalcemic. In our patients, their other parathyroid glands are working wonderfully and we’ve done close to five or six thousand of these patients now that we’ve sent home immediately after the operation and hypocalcemia is never a problem. We have a protocol, we give all our patients calcium pills. All my patients get a box of calcium when they meet me. We put them on three calcium pills per day for a week and then taper them down. That’s for their bones, but that’s also to make sure they don’t get hypocalcemia.

01:00:41:00 I think that’s all the time we have. It’s been a pleasure having you with us here at Tampa General. You can view this film in its entirety. Within a couple hours from now it will be archived and visible on the internet and it will be there indefinitely there on the internet for you to watch. It’s a pleasure having you with us. Goodbye.

NARRATOR

01:01:07:00 This has been a live webcast of a minimally invasive radioguided parathyroid procedure from Tampa General Hospital in Tampa, Florida. For more information, to make a referral or make an appointment, click the buttons below.