Treating Chronic Back Pain with Minimally Invasive Surgery

South Miami-Dade Baptist Hospital
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Welcome to this OR Live program presented by Baptist Health South Florida.

Welcome to OR Live. Today we are coming to you live from South Miami-Dade Baptist Hospital, where in just a few minutes from now, neurosurgeon, Dr. Sergio Gonzalez-Arias, will be performing a minimally-invasive disc removal procedure. Now you are going to see that entire procedure live right here on the web and also have a chance to have your questions answered by our surgical team. All of that is coming up over the course of the next hour.

But first, before scrubbing in this afternoon our neurosurgeon was kind enough to prepare a taped piece explaining for us something about the anatomy of the spine.

One of the most common surgical procedures performed on the lumbar spine is those procedures aimed at relieving the pressure on nerves from herniated lumbar discs. We know that the lumbar spine has five segments and in between each segment there is a disc, S1, L5, L4, the two most common discs that are her herniated, followed by 3-4, 2-3, 1-2. The disc herniation is in itself very similar to what happens to a jelly donut when you squeeze it.

Really, it’s not jelly. It’s like crab meat. But if you can think of a structure like a donut, which is harder on the outside than on the inside and that inside starts protruding and herniating through the harder part called “annulus,” until it extrudes into the canal where the nerves are and you create compression of the nerves, which is what often gives us the pain that patients present with down either leg, reaching the foot, rendering unable to carry out their routine daily activities because of the limitations related to the pain and the neurological deficit that patients present.

Most often patients do not require a surgical procedure. They’re treated conservatively, and very often patients do improve. But that percentage of patients that does not improve with conservative treatment modalities are very good candidates for a minimally invasive microlumbar discectomy, and that’s the surgical procedure that you will see with us today.

It is a procedure that minimizes the injury to the tissues from the skin, all the way down to the bone where we have to get to be able to free the compression on the nerves that are creating the symptoms and physical examine findings such as weakness, numbness, change in reflexes that are often associated withed compression of the nerves in the lumbar spine.

I will walk you through the surgical procedure that we are performing live today, and we will discuss every detail of the surgery as it’s happening and hopefully be able I believe to answer some of you questions. Thank you for being with us, and I hope you enjoy the educational series that we’re going to do.

All right. Now that we have some understanding of the anatomy involved, let me remind you one more time, this entire hour is an interactive experience. We would love to hear from you about your own questions concerning spinal surgery during the course of the broadcast. Just send them in via the web and we will bring them into the OR, where our team will answer them for you. And speaking of that team, let’s bring them into the conversation.
Dr. Sergio Gonzalez-Arius, thank you for letting us eavesdropping on your surgery this afternoon and welcome to the broadcast. First off, what can you tell me about the patient you’re working on today?

Well first of all, welcome everyone. Before I get started, I would like to introduce the team that really allows this type of procedure to be performed. It’s not just the surgeon. My trusted assistant, Dr. Denny L. Sagee; one of the most experienced neurosurgical scrub technicians, Diana Combsadia, Lizette Wispy, who is our nurse and has been with us for a number of years; and obviously our nurse anesthetist that keeps the patient quiet, Elizabeth Lopez. We also have to have -- in order to perform minimally invasive procedures, we have to have good x-ray localization and Cedric Moss is our X-ray technologist that allows us to perform precise approaches to our surgical area.

This patient is a 42-year-old teacher that has had significant lumbar pain, really mostly buttock pain traveling down her left leg for a number of months. She tried all conservative treatments and did not find significant relief. So an MRI was performed, and the images, as Lizette is pointing out to you, on the left-hand you have a large disc herniation at the L5/S1 level, which is protruding into the canal where the nerves are. When you go to the right side you see that protrusion in a slice, so if you take the entire spine and you put it in a slicer and you start slicing and you look at the spine from the feet, the left side is on the right side of the image, and you see that large black protrusion, which is compressing the nerve.

What I’m going to show you now is how we approach that area. The lamina, which she’s pointing to now, is the bone we’re going to use as reference for you to follow that I perform now. So we’re going to go to the microscope now, and as you can see, the incision is very small. This is an instrument that I’m going to be using, so I want you to see the size of the instrument. And you see as we magnify the image to approach it and perform our surgery, it will appear to be very large instruments, but in reality we’re using very small instruments.

Doctor, can you tell us what you have done to prepare your patient. Just bring us up to speed on what’s happened up to this point in the OR.

We perform approximately a 20-millimeter incision on the skin through which we use a set of dilators to introduce this tube-like retractor that allows us to approach the area of surgery, minimizing injuries to the soft tissues. We have been performing this type of surgery with this type of retractor and other retractors for the past 14 years or so as an outpatient. So this patient will, if everything goes as it usually does, will be going home, and most likely still having dinner tonight at about 8:00 o’clock in her home.

Oh, that’s amazing. We’re going to let you dim the lights now, because I know you need the lights down so that you can have the best visualization, and we’re going to go ahead and have you begin the procedure. I will ask you, Dr. Gonzalez-Arius to please be very pedestrian in your explanations for us, because I’m sure many people at home have never seen a live surgery on the air before.

Okay.

Go ahead. Explain to us what you’re doing now.

So this is the lamina, and now we’re going to magnify the image to our working channel. So as you can see, everything looks huge, and you saw that instrument how small it was.

Very tiny.

So if we focus on it, this is the lamina of the bone, this is what’s called the “yellow ligament.” We’re going to drill part of the lamina, we’re going to remove the yellow ligament, and we’re going to enter the canal, look for the nerve, and identify the disc herniation and remove it.

All right. As you get to work now, let’s just talk in general about the kind of back injury that would lead to this kind of surgery. How do I know, for example, if I have a sore back the difference between an aching muscle and a ruptures disc?

Well the vast majority of patients do not have a disc herniation. The vast -- close to 70 percent of patients with back pain and even leg pain are not necessarily due to this disease. Muscle, ligaments, tendons can create pain
that mimics the same pain as you would see in someone with a disc herniation. So that’s why we always try conservative treatment if the patient condition permits it.

Most patients that go to surgery are those patients that fail conservative treatment and have demonstrable neurological deficit attributable to the nerve that is being compressed. At the end of the day, the nerves in the lumbar spine are very similar to a cable, so an electrician looking for a short circuit knows what to test, and so do we. So that’s how we choose most of the patients that we perform this type of surgery on.

We’re going to come back to that point in just a minute. But can you explain for our viewers at home the tool you’re using now and you’re doing there. Well as I said before, I am performing drill just a few millimeters of the lamina at the left L5, and I will now continue to remove the remaining bone to expose the yellow ligament, which is the last layer of tissue before we get to the canal.

All right. Let’s go back to back pain. Why is it so common? Why do so many of us suffer from lower back pain in particular, such as your patient is having to deal with here?

It’s a multifactorial issue. You know, it’s our posture, our body habits, the way we use our back. All factors are genetic, make up, all those factors come into play, and it’s just a common issue with the human race. You know, our movement occur in the lumbar spine and in the cervical spine for the most part, so the wear and tear of those areas can also lead to degeneration of disease, including disc disease, and that’s what we’re seeing here.

And is disc disease also caused by a lack of water in the system? Is that something that I had heard before that as we age we have fewer fluids in our system?

Well maintaining good hydration is often an important part of our daily routine.

Right. But it’s never one factor. There’s too many. It’s always multifactorial, and thank God most patients do not require surgery.

Right. Let’s talk about. Before you end up in surgery you talked about trying other treatments. Are steroids uses, anti-inflammatories? What else should we try before ending up on the surgeon’s table?

Usually a trial of exercise, or depending on the acuity of the symptoms, starting with a period of very short period of rest, following by physical therapy on even patients who do not want to contemplate surgery, depending on their condition, consideration for epidural blocks and injections. Though there’s really no definitive evidence in the literature to say that any of those treatments really provide significant long-term results, though, you know, I see many patients that do improve following conservative treatment.

Right. So we try it, if the patient’s condition permits it. Some patients have such compression and such neurological deficit that it would not be advisable to the delay relieving the pressure on the nerve or nerves that are compressed.

For example, the patient you’re working on today, knowing the extent of her injury, would this ever heal on its own?

Well this can reabsorb, but the question is finding the right balance. If a patient has a significant neurological deficit after an adequate trial of conservative treatment modalities and their lifestyle remains limited to the point that they cannot walk normally, work normally, or carry out their routine daily activities, the question is what is the best treatment for the patient?

We know that discs can disappear by themselves. Long-term patients that have refused sometimes do get better, and we see the discs disappear, but I don’t know if that’s a worthwhile risk when you have a significant neurological deficit.

Right. Can you explain to us a little more as you proceed during the procedure here what you’re doing right now.

Right now I’m just pretty much ready to enter the canal. I’m about to cut the yellow ligament, so when I do that we’ll get into the canal. I’ll go step by step. I’m just cleaning off all the tissue so I have good adequate exposure for my microlumbar discectomy.
All right. We just want to remind our audience at home you are watching Sergio Gonzalez-Arius, the chief of neurosurgery, and the medical director of Baptist Hospital’s Neuroscience Center here in Miami. He is performing minimally-invasive disc removal surgery. More than 250 of these surgeries are performed here at Baptist Hospital here in Miami every year.

Doctor, I know lots of people out there are suffering with something called “sciatica.” Is that the same as a disc rupture?

No, it’s not. Actually sciatica is a bad name.

It is? Why is that?

Because sciatica is used for anything that refers to pain down the leg. The reality, however, is that it also implies that there is something wrong with the sciatic nerve, and that’s not the case. Pain down the leg does not necessarily have to be related to any compression of a nerve. It could be muscle, tissues, or ligaments.

So I’m now going to open the yellow ligament. I usually use this instrument to grab it and lift it up because the nerves are close by, so I make an incision.

So that’s a suction instruction you’re using.

No, I’m not.

No?

No. This is just an instrument is able to grab. Now I’m just going in, and I’ve just entered the canal.

Wow.

The grayish white structure there is the dura, which is the covering of the nerves, so now I have to remove some the yellow ligament to --

Actually reach it. This is a good time to ask a question that we were just sent in via the web. One of our viewers is wondering why this minimally-invasive procedure is so advantageous over the way this surgery may have been performed 20 or 30 years ago.

Well I think the main reason is that there is significantly less tissue damage, though, I cannot tell you that it is in itself better than the standard discectomy. One of the greatest advantages of it however is the fact that by getting used to working under microscope with these types of retractors then we can go to more complex procedures that usually would require a much longer hospitalization and much greater amount of pain, so we improve what we offer our patients.

So I mean I’m bias. I believe that this is an easier and better procedure to perform than what most of us learned during our training period. But that’s my opinion. I cannot tell you that that holds true for everyone.

Well let’s talk about the obvious advantage. You’re working with very small incisions here, so the healing time has to be faster, doesn’t it?

Yeah. The healing time, if you look at the literature, even though it sounds like it should be, it’s not necessarily the case.

No kidding.

They do heal well, but, again, the advantage, as I see it, is that I do perceive that the patients use less pain medication. Yes. And they do return to their routine daily activities faster.

And there seems to be very little bleeding associated with this procedure.
Well that's, I think, a technical issue that really depends on the patient's body habit and the surgeon's technique.

I'd like to go back to just the diagnostic stage for this as well. How do you as a surgeon determine the extent of the injury and decide that surgery might be the best course of action. As I said earlier, the first thing is a good neurological exam and good history.

Right.

That tells us what a patient truly is presenting with, and then depending on the physical exam findings, the decision as to whether an imaging study is warranted or not. Usually, unless the patient has a clear neurological deficit of significance, conservative treatment is appropriate, and that is from simple anti-inflammatory medications and analgesics to physical therapy and physical therapy modalities, followed by pain-related procedures such as epidural blocks. A lot of patients go through all of that.

And it's not just an issue of pain with the extreme cases of disc disease; correct? There could be something called the "drop foot," there could be bowel or urinary issues associated?

Well that is part of the neurological exam and the good history taking. A drop foot means that one of the important nerves in the canal that goes to the legs is compromised, and that in itself, depending upon the time of the presentation, could be pretty much a surgical emergency to try to decompress that nerve and give that nerve to the opportunity to improve significantly with less pressure. The longer it's faced with pressure the worse it is.

What I'm doing right now is -- I know that it is foreign to most people that are watching, but I'm removing the lateral aspect of the yellow ligament to expose the nerve, which is seen right there. This is the nerve, and I'm going to point to you right now that it's actually being compressed, and disc herniation I can actually feel it on the knee. But I will get to it in a few minutes. I like to have good exposure, everything nicely laid out.

So the white section is the nerve itself? This is the nerve here, which is compressed posteriorly by the disc below.

So you can see it actually bulging there.

A very point to show you the compression that this nerve has even before we go further, you can see that the fecal sac, which is where the nerves are that keep going down to go to our bladder, to go to our genital area, and intestines is here.

Yes. This is the nerve that's come off this sac, so this is the nerve coming out of this level.

Wow.

You can see pulsations here. Yes.

But you don't see the nerve pulsating, and that's because the disc is compressing and pushing it up. So very often you will see after we decompress the nerve, how once we take the disc out how the pulsations return.

You know when you actually see it you can understand why the pain is so extreme for the patient.

This is very debilitating, and this patient will most likely wake up pain free down the leg.

Unbelievable. As we continue to watch the surgery live here in the OR, I want to remind everybody watching at home that our surgical team is here to answer any questions you may have about spinal surgery. You can send them into us via the web. There's an icon on your screen that you can click. You send them into us, and we will read the questions here to our surgical team and hopefully answer them for you live right here on the air.

As we go back to our shot of the surgery taking place, are there side effects, doctor, to prolonged use of treatment if you choose not to have the disc surgery, if you choose to stay on anti-inflammatories or stay on steroids? Are there prolonged side effects to that?
Very often, just as this patient is, I first saw her some months back, and she went through treatment and did not improve. I offered it to her and she did not -- she was scared. So she put it off and came back and said, "I can't take it anymore." So that's a common situation.

Right.

However, the real danger is in a patient who has a significant neurological deficit that does not improve or worsens, and because of fear or bad advice, do not consider a discectomy if that is the problem. There's many other procedures that are -- depending on the modality that the patient has that we routinely perform. And spinal stenosis is done in a minimally-invasive way utilizing the same type of retractor and performed as an outpatient procedure in most patients.

I see that you're also moving in very small areas. This is a very meticulous surgery, and you take your time getting to the area where you need to be.

Yeah. My grandmother taught me a great saying, "Dress me slowly, I'm in a hurry."

Good to know from your surgeon. We do have a question from one of our viewers who wants to know, "What's the difference between a herniated disc and a slipped or a bulging disc?" Are they all the same thing?

They're all the different names of compressions. A bulging disc or protruding disc, you know, there are many words used to sort of try to give an idea of what it is, but they're interchangeable for the most part.

I'm about to expose the nerve right now, so here's that nerve that I'm pushing out.

Yes. And there's the disc herniation below.

Wow. Oh, yes, you can see it.

Okay. So this white thing that I'm showing you --

Yes.

-- is what Lizette pointed to before. Do you have it, Denny?

Yeah.

This is the crab meat that I talked about before.

Exactly. So when you actually remove the disc, what functions in its place? Does the body not have to have all of its disc to be able to move freely?

Well the realities that this disc has already lost its function because it's already herniated -- degenerated to the point. So certainly it's not the same -- you know, you do not end up the same biomechanical situation as someone who has perfectly normal disc, but for the most part, it is not something that becomes relevant whatsoever.

Can you do a multiple discectomy on the same patient?

Yes. We have done -- I can tell you that I reviewed for a presentation I had to do in Europe close to 1500 discectomies that's I performed in the last nine years.

My goodness. And of those, we've only re-operated 21 twice, but four patients had three surgeries.

My goodness.

So, you know, statistically it’s insignificant. But if you’re one of the patients who required three surgeries, it’s 100 percent to them.
Absolutely.
That’s reality.
Yeah.

So let’s start taking the disc out.

All right. We’re going to watch you as you do that. Can you tell us a little something more about the instruments that you’re using. I understand that some of them have even been developed here.

Well these -- hold on a second, let me do some surgery here.

Sure. Absolutely.

So there is the disc coming out by itself.

That shows you how much compressed it is.

That shows you the compression that this patient had.

Oh, my goodness, look at that. Does that often happen?

Well when it’s an acute disc compression. So was my description of crab meat appropriate?

Exactly. And I can’t believe how much it’s coming out so much on its own. Now will that come out in pieces, that disc?

Sorry?

Will it come out in pieces.

Sometimes it comes out in one large piece. Sometimes what you have is a herniation like that one. What I’m going to -- I’m going to coagulate these edges and we’re going to go into the disc space to clean it out.

So you want to make sure there is no residual bone left from the disc, or is it bone or cartilage? What is it?

It’s actually soft tissue.

Soft tissue. Okay.

And we just go in and remove whatever pieces come out easily. We don’t go in scraping.

Okay.

Because we don’t want to create an inflammatory response.

I see.

Actually, that piece that I took out is probably all that this patient needed to be relieved of most of her symptoms.

Boy, when you see the body literally eject the offending portion, you understand how badly this patient needed this procedure.

Absolutely.

It’s incredible to be able to see it on television. I will tell you that we did get another e-mail from one of our viewers. You have some medical students watching you today, doctor. “I’m watching this from my anatomy class,” says our viewer. “You removed the yellow ligament. Does that affect the patient in any way?”
Well first of all, we are removing less than a centimeter of tissue, so this is very small. This conoid that I’m putting in there now --

Yes.

-- is one centimeter in size.

Just so I can compare that for people at home, it looks like the size of a Chiclet.

Actually it’s smaller than that.

Even smaller, yes.

Yes. So even though it looks magnified, of course, through the magnification you’re seeing on the screen --

We’re working at about six times the magnification.

Wow. And tell me exactly what you’re doing now.

Now I’m just coagulating the edges. I don’t like to see blood.

Right.

And this is minimal blood. Imagine that if we’re working at six times magnification, when you see a little blood like that is almost insignificant.

And explain to me how you’re getting the blood to coagulate.

I’m using a bipolar coagulator, which is an instrument that coagulates between the legs of the instrument, so it doesn’t coagulate on the outside, so it’s very safe.

Now are you having to cut through muscle or you’re just moving it to the side?

We did not cut muscle.

You didn’t.

And you will see that as we remove the retractor in a little while how we accomplished that.

And, again, that’s got to help with recovery time.

Oh, yeah, absolutely.

What a difference to the patient in terms of mobility post surgery.

Absolutely.

As we continue watching this live broadcast on OR Live, we would like to remind our viewers at home that if you would like a referral to a Baptist Hospital physician, you can call our free referral service. I’m going to give you that number in case you have a pen or pencil handy. It’s (786) 596-6557, or you can call toll free (800) 228-6557. This service is available from 8:00 until 5:30 Monday through Friday. Let’s take you back live to the shot of the surgery going on here at Baptist Health South. Again, you are watching a live procedure here on OR Live, a 42-year-old woman with a bulging disc, in terrible pain, has been living with it for, doctor, you said more than a year now. She came to you and chose not to have the surgery a while back, and then the pain got so bad, she revisited your office and decided it was finally time to go forward.

Going back to your point, I just want to be sure to let the audience know that I just happen to be the one doing this procedure, but here at Baptist Health we have excellent micro neurosurgeons at our facilities. My colleagues, Dr.
Clem, Dr. Seomin here at Baptist, and Dr. Ybarris and Dr. Train at South Miami also are proficient in this type of procedure, so we are very blessed at Baptist Health to have this service for the community throughout our facilities.

Well let me talk a little bit more about that. Why is it so important to be sure you are dealing with a team who has done a lot of these kinds of surgeries?

Well, like everything, the more you do it the better you get it at.

Right.

So that's an obvious situation. I think that's not just the surgeon, as I alluded to at the beginning. I think you have to have the appropriate team, the appropriate anesthesia, the appropriate X-ray imaging, and technology is very important. And I think our technology here is second to none anywhere in the State of Florida, for that part, most of the United States. So between the expertise of our colleagues and the equipment that we have, we're able to provide this type of service to our community.

We had a viewer who wanted to know if you start to do this procedure laparoscopically and --

I'm sorry.

We have a viewer who asked if you start to perform this procedure laparoscopically and you can't do it with these smaller instruments, do you ever go back to the other way of performing the surgery?

Well the word "laparoscopic" really refers to -- I'm just trying to get more light in there -- refers to procedures that are performed in the abdomen.

Ah.

So this is microsurgery.

Microscopically. Okay.

See, microscopic in the lumbar spine.

Got you. We have another question. “Does the surgeon ever decide to perform a laminectomy versus a discectomy based upon what you see through the endoscope?”

It depends on the disease that you have. Often you have to perform a laminectomy to remove -- if you have a very large disc herniation that is compressing the entire sac where the nerves are, that in itself may require a laminectomy to get enough room so we don't compress the nerves any further.

Let's go back to the video and have you explain to us again exactly where you are now in the procedure.

Okay. Let me show you what I meant before. You see how that nerve is now moving?

Yes.

Okay. That was not moving before. So that nerve is decompressed right now.

Yes. You can see it pulsating.

So I'm very sure that this patient will most likely wake up without any pain in her legs.

Does she have any idea how she hurt her disc? Was it an injury or some kind?

No. Most often these discs present unrelated to any specific injury. It can be related to injury, but most often they are not.
Let's talk a little bit about recovery. I know you said she is going to be home and eating dinner by 8:00 o'clock this evening. What are her marching orders going forward?

Well the instructions I give the patients as they go home and they're going to be like a leisure vacation for the first seven to ten days until I see them in the office again. I instruct them to move normally, not to refrain from bending forward when they're going to sit down or anything like that, because if they do, what will happen is when the pain of surgery goes away, they'll be stiff, and so I ask them to move normally.

So I see them at seven to ten days, and I give them instructions that during those seven to ten days they can go to dinner, they can go -- let me have the bigger one -- they can go to a movie. If they go to a movie, sit in the last aisle so you can stand up and stretch and not bother anybody. And then I see them in the office, and if they do as well as they usually do, I tell them that they can go back to driving, and depending on the type of work, I release them at that point.

If they are a police officer, you tell them, you know, "We'll wait a while."

Right.

But they can return to what's called "light duty work."

Right.

And then after I see them in about three to four weeks, they go to exercise program that I give them, they can go back to their normal life.

Now you say you give them an exercise program, what kind of exercise would be involved after this kind of surgery? I assume they're not playing tennis or back to golf.

No. What I tell them -- the most important exercise is to use their body normally. Uh-huh.

And besides that is to prove their flexion and extension by stressing the muscle. You want that muscle to deal with normal movement so you can resume your normal activities. And really that's it. It's not that complicated. Very often patients, after the surgery, say, "My God, if I knew it was like that, I would have done it sooner."

Right. And if you would continue, please, just your narration, what is it you're doing right now?

I'm just completing whatever pieces come out easily.

And you don't feel any kind of bulge like you did before?

I'm sorry, Diane, I did not hear you well.

You do not feel any kind of bulge like you did before?

Oh, no, no.

Removing that one piece almost certainly did the trick.

Which is usually the case, there's a huge herniation as you saw, and then the patients get better. So now we're going to explore.

Tell me about the instruments you use to explore the area.

Well this is called a "Woodson," which is an instrument that allows me to get underneath the nerve and go follow it to make sure I that I'm decompressed, which I believe I am.
We have a very good question that was just sent in. “Does the nerve heal immediately after the herniation is removed or could there be long-lasting effects of a nerve that was pinched for so long?”

It depends. Quite frankly I’ve seen everything. I’ve seen patients with very -- do you have a smaller one -- I’ve seen patients with significant compression that have significant neurological deficit and immediately get better. I’ve seen patients take longer. The most important thing is that the pain, which is the debilitating factor, usually improves immediately, followed by weakness, and usually sensory changes are the ones that take the longest.

Now do most of your patients find that after the healing period is completed -- and how long would that healing period be; for example, from surgery to the time you could get out on the tennis court?

I always say depending on the physical status of the patient, usually three weeks, four weeks.

Really?

Six weeks at the most.

Six weeks from surgery to being back on a tennis court?

Yep.

That’s incredible. I think what many people at home might also find incredible is that this patient’s going to be back on her feet tonight. You want her up and walking tonight; correct?

She’s going to be up on her feet walking in the recovery room, and she’ll eat and go home.

Now that’s got to be another positive side effect of doing this minimally-invasive procedure.

Absolutely.

She’s actually under anesthesia for a very short period of time.

Absolutely. And anesthesia, I know from personal experience, the longer you’re under the longer you feel its effects after the surgery.

Absolutely.

Maybe you can -- Liz, anything you need to say about anesthesia?

Let me walk over here, Liz, because you’re not mic’ed up, so I’m going to sit right next to you. Okay. Tell me again. She’s under anesthesia. How long has she been there?

Well we got into the room at about 2:30.

We made the incision about 3:30.

Okay.

Yeah. So we got to bring her in the room at 2:30, pretty much connected her to the monitors, gave her some medication, and she fell asleep, intubated her, positioned her prone, and then pretty much prepared everything for Dr. Gonzalez-Arius to take over.

And can you speak to the fact that when people are under anesthesia for long periods of time, three to four hours, the difference in their recovery post surgery.

Yeah. I mean obviously the longer the patient’s under general anesthesia the more effects we will see.

Yeah.
They might get the nausea and vomiting.

Right.

They might be a little groggy.

Right. All right. Thanks for your input. I'm going to come back over here so I can get an eye on what's being done now on the surgical table.

The substance that you saw me put in there is a collagen substance called “Surgifoam” that allows us to achieve optimal hemostasis very easily.

Hemostasis in English would be?

I'm sorry. I'm sorry. Stop the bleeding.

Stop the bleeding.

Which is minimal. I mean we're seeing -- remember what you're seeing is six times magnified. So we put a little sponge with thrombin, which is a substance that promotes clotting, and we'll leave it there a few seconds.

I wish people at home actually could get a view of your instrument table. Obviously for health reasons, we have a very limited number of cameras in the OR, and we are, again, thankful for you for allowing us to come in even with those.

Let's show them the instruments.

There you go. It's really incredible, and if you wanted to show -- I don't want to get too close, but the size of the -- correct. What is that called again? Those pieces that you were putting into the patient to soak up the bleeding are actually very small. They look big on that shot, but they’re certainly not.

So as you can see, we use a significant number of instruments, even though everything looks very simple in what we do. And I asked you before, some of those were developed here at Baptist, were they not?

Well actually just one or two of them. They were just modifications of existing instruments.

All right. I just want to remind everybody watching at home, you are watching neurosurgeon, Dr. Sergio Gonzalez-Arias, the chief of neurosurgery here at Baptist Hospital in South Miami Dade. He is performing a live disc removal surgery right here on the air, and we do invite you to continue sending your questions into us.

How far through the procedure are we now, doctor?

We're now about finished actually.

Almost finished already. And as we look at this live shot again, what are you doing at this very moment?

I'm taking out the sponge to check on my coagulation, which looks pretty good. Again, what's important is you see how that nerve is moving completely free.

So that's exactly what you want to see in this kind of surgery.

A little bleeding down there, so we're going to make sure we get it.

We have a viewer at home who has a specific question. Before I ask that, what is that that you just sprayed in there?

That is -- it's called “Surgifoam.” It is a collagen matrix with thrombin, which is the clotting promoting substance that we just put it in in the area of bleeding to create a little clot. The good thing about it is that it gets reabsorbed by the body without much problem.
Incredible. I know that you mentioned before that in very rare cases a disc will disintegrate all on its own. What happens to a disc that disintegrates in the body? Where does it go?

Well a good way to think about it is think of a sponge.

Yes.

This material, per se, has a high content of water. So if you think of it as a sponge, if you squeeze the sponge you lose water, the sponge gets smaller. So if the disc happens to start degenerating and the water content starts decreasing, then the disc herniation may slowly begin to disappear.

How often is it that somebody who has a problem with one disc will later in life develop a problem with another disc?

I can tell you that in my experience, which obviously is my anecdotal experience in my 25 years, it’s very rare, though it is not -- we do see it. Uncommonly we see it once in a while because of the factors involved.

Right. There’s familial problems that we have genetic implications. I’ve operated on an 11-year-old girl with huge disc herniation.

My goodness.

That’s very rare. I’ve only operated on one that age.

Wow.

I’ve operated 15, 16 years old. I’ve operated on more 18, 20 year olds. But the vast majority of patients are between 35 and 55.

And how much is obesity a factor in this?

Obesity is a factor in everything. It impacts on the mechanical stresses that we put on the spine. So if you have multiple factors that predispose you to have a particular spine-related problem, if you tag on another one like obesity or you tag on another one like smoking, all those things compound each other, and then the incidents of disease becomes more prevalent, but you need all the factors that create the problem.

All right. Doctor, as you continue working, we do have a viewer at home who wants to know, "Is there any risk of damaging the spinal cord?"

Well the spinal cord ends at the L1/L2 level in most human beings, and from the end of the spinal cord, all the nerves that go into the lumbar spine come down, and it’s called the “cauda equine,” which is the Latin term for horse’s tail. So imagine if you have all these nerves that are coming down, so that’s what’s inside the sac here, it’s the nerves. So the spinal cord cannot be injured, per se. You certainly can have a problem if the disc has been there a long time and it’s adhering to the nerve or to the fecal sac, and that can create -- thrombin -- I mean (INAUDIBLE). So I’m just going to put now a little cortisone substance.

All right. And the purpose of that is?

Just any inflammation, any irritation that -- at the end of the day surgery is an insult, so just to try to limit that. So now what I’m going to do is I’m going to remove the retractor, and you will see how the muscles come together. Hold on. Let me have the (INAUDIBLE). So I bring it up. If there’s any bleeding points I’ll coagulate it. See how the muscles come together.

Yes.

We’ll see.

So you’re done with everything you need to do internally for this patient?
Yes.

And how much pain is associated with having the muscles retracted like that?

Very little.

Very little, huh.

But, you know, there is some pain.

Right.

But you have to reassure the patient that it is purely a local mechanical pain.

Right.

That it is not a --

And what kind of medication are you prescribing for tonight and tomorrow and the next day to go forward to deal with that pain.

Just a neural analgesic.

So based upon what you told us about the amount of pain she was in prior to the surgery, this is going to feel like a cake walk.

Yeah.

Yeah. And now you’re just gently trying to remove the retractor?

Yeah. But I’m very meticulous about the amount of potential bleeding because it can create black and blue or something like that. So I don’t like to see blood.

I think that’s a very good thing to have in your surgeon. Obviously the gentler you are during the surgery, the easier the recovery is going to be.

Absolutely.

Yeah. We have another question in from a viewer. “I have a thoracic disc herniation at T7/8, does my area of disc herniation eliminate me as a possible candidate for this kind of surgery?”

A disc where?

T7/8 it says.

It depends where the disc herniation is. I see. So they would have to go to their own surgeon or make an appointment to come see you here at Baptist Health.

Well they should talk to their doctor. I’m sure their doctor will refer them appropriately. I’m sure their doctor works with neurosurgeons on a regular basis, and it will be their decision.

We have another viewer who said that they have two prolapsed discs, L3/L4. They have been in pain since 2004. They have had three epidurals. Still have pain every day. They were told that because the discs are not compressing the spinal cord and it’s only a small budge, they don’t need surgery. What would you recommend?

If what that that viewer says is objectively the situation, they’re being given the correct advice.

They are being given the correct advice?
That’s good to know.

You see how the muscle fibers come together. The muscle fibers are not split.

Yes. They almost look like they don’t even need sutures, how close together they are there.

Yeah, but we make sure.

Well that’s a good thing too. That’s why you’re the doctor and I’m the journalist.

Now what I’m doing is closing what’s called the “lumbar fascia,” which is the layer of thick tissue that covers and contains what we call the “paraspinal muscles,” the muscles that are right next to the spine.

Okay.

Which are the ones that we used to cut and separate before. Now we just go through them through a very small incision, which I will show you once we’re done.

Your patients must be amazed when they actually see how small that incision is.

I’m pretty amazed too.

After a short period of time it will disappear; right?

Yeah.

You won’t even be able to see it.

It’s very tiny. It obviously depends on each patient’s characteristics for healing. Some patients heal well and some patients have a tendency to have a keloid formation or tough scars. But at the end of the day, quite frankly, their scars are not the issue for them.

Correct.

It’s the pain that they’ve gotten rid of that makes the scar worthwhile.

We have another viewer at home -- I have a feeling this might be another doctor in training, though it’s probably a young viewer -- wanted to know what is the film over the surgical site there and what’s its purpose.

This is called a “biodrape,” and it is an iodine impregnated isolating sheathe that maintains all of the skin outside of the surgical field except where we cut. So it’s all aimed at maintaining sterility and minimize the risk of post-operative infection.

So the skin would have a tendency to retract further?

No. No. It’s just to prevent infection.

I see.

All our skins have routinely bacteria on the skin. So even though we take the precautions of appropriate washing the skin and preparing it with iodine solutions, we go the extra step, as most other surgeons do, and put these protective shields to minimize the risk of infection.

And also, again, I guess that’s another benefit of this minimally-invasive procedure. When the patient goes home, they have a very small surgical site to worry about the dressing.

Absolutely. So now we’re done. Let’s look at the real size of our incision. Let me have a ruler, please, any ruler. So there’s the incision. So it’s obviously less than an inch. It’s about three-quarter inches.
Wow.

And in millimeters, it's probably 18 millimeters or something like that.

Yeah. It's just incredible.

20 millimeters, or something like that, so it's very small. All we have left to do is put sutures now that are underneath the skin, and then we will put little Steri-strips, little pieces of paper with glue sterile that keep the pieces of skin together.

Right.

And we close the skin.

And you were just continuing to compress there to make sure there was no additional bleeding?

Correct.

I see. We have another question from a viewer, doctor. “How tough is the nerve? How are you able to push and pull it out of the way without causing any permanent damage to it?”

I'm sorry, I could not hear you.

All right. I'm going to turn around so that you can hear me. We had another question from a viewer who wanted to know how you were able to push and pull around the nerve without actually causing damage to it.

Well, again, the point is that even though it seemed like a significant retraction, we were working six times magnification, so the movement of the nerve was actually quite minimal. And the whole safety objective during the surgery is not to push on the nerve but to get underneath the nerve and bring it over the hump of the large disc herniation that you saw. So a nerve can get injured during surgery, but with magnification and minimally-invasive approaches, those nerve damages, I think, have decreased significantly over the years.

And again, we’ve said it before, but I think it’s worth saying again, doctor, that speaks to reason why you need to be coming to a surgical facility where the doctors and the entire surgical team have a lot of experience with this particular procedure.

Absolutely. We have a team here that we all work together day in and day out. Our nurses and our scrub technicians take call with us, so when at night when we have to come for an emergency, our team is the same as during the day, which is an incredible quality opportunity, and most of all, much more safer for the patient, as there is no delays in surgery or hiccups during surgery because of not knowing equipment or not knowing certain devices. So we’re blessed at Baptist Hospital and Baptist Health to have that type of organization.

Is this a surgery you’re performing almost every day here in the hospital?

Yeah. I usually perform anywhere from three to five of these a week.

Oh, my goodness. And you said before that one of the advantages of performing this kind of minimally-invasive procedure is that it leads you to develop better techniques for more complicated surgeries?

Correct. I think that that is a very important point for us physicians to embrace, which is doing a discectomy can be done many different ways, and if you decompress the nerve like we did and accomplish the same goals, whether you have two or three day more pain or not, at the end of the day, it's not significant in the long term. The most important thing is by becoming accustomed with minimally-invasive approaches and the correct technology behind it, it allows us to perform procedures such as lumbar stenosis or fusions in a lot less invasive way than we used to perform them years ago.
Well because we're going out live over the web, people could be watching this literally all over the world, so if they're not living here in South Florida, what should they be asking their surgeon in terms of their experience before they feel comfortable having them perform this kind of surgery on them?

I think the most important thing is when they have to ask very little, because that means that the doctor has done his or her job in educating the patient on the specific problem they have. I think, however, of importance is knowing what type of procedure the physician does, why they perform it that way, how many do they do on a regular basis. I think those are important things. But to me, after the years of practice, I believe that most important of all is to feel that you have the trusting relationship with your physician and that you feel that that person is going to do the best that they can for your problem and all understand the limitations of surgery and medicine. Nothing is 100% perfect, but if you have a good trusting relationship and you feel that you have a well-educated board certified physician that you trust and their explanations seem reasonable and you even obtain a second opinion to confirm that that is the most important.

Now at the beginning of the procedure, doctor, you showed us two X-rays.

Yes.

Over on this side of the operating theater. If you were to take another X-ray now, what would we be seeing?

That black nub sticking out is gone. That's the piece that we took out.

And is there another X-ray performed after the surgery just to make sure everything is removed, or you feel certain having had your hands on the spot that it's done?

Well I'm quite confident that we have done the appropriate procedure for this patient, but more importantly is the patient's response to the treatment. There's not reason to perform an X-ray if the patient has an excellent result and returns to his or her usual self. These are very costly procedures, and you only should performance of diagnostic tests when the clinical situation warrants it.

Now you and I spoke before the surgery took place, and I was really quite impressed with the fact that you encourage all of your patients to try these other modalities to before finally resulting to surgery.

Yeah. Depending on the clinical condition of the patient, we certainly recommend -- we're not knife happy as the community uses the term.

Sure.

We think that patients should be treated according to the clinical condition, and most often most patients who develop significant pain down one of the legs or both can be treated conservatively and do very well, and only a very small percentage of the patients present that way and go on to require a surgical procedure. Now having said that, this is probably the most common surgical procedure that we perform in the lumbar spine just by the nature of the incidents of disease. It is very common to have disc herniation, and because the number is large, there is a significant number of patients that do not improve with conservative treatment or have a neurological situation with weakness, numbness, or loss of bladder and bowel function that warrant immediate surgery.

Now we talked about which patients are good candidates for the surgery. But are there patients who you would not recommend to go forward with this kind of procedure?

Well just like the patients that called earlier. If you have pain but your actually MRI exam and your physical exam do not correlate with evidence of nerve compression, surgery is not usually not helpful, and that's the type of surgery that can lead to further problems, because the patients don't do well, they keep having problems, and then somebody will consider doing a fusion. They do a fusion, and they have chronic pain for the rest of their life, when in reality they may have not warranted any surgery up front. That's rare. I'm mean I'm just using a theoretical. That doesn't happen often.

And there's no age cut off. You said you operated on an 11-year-old girl.

Yes. And I would assume you have very elderly patients who do very well with this procedure.
Uh-huh. The old patient that I've operated with the minimally-invasive procedure, which was not for this, it was a 92-year-old lady --

Oh, my goodness.

-- whose parents died at the young age of 108.

Oh, my gosh.

Who was very healthy, probably healthier than you and I, and said, “Doctor, I don’t want to live the rest of the time with this pain,” so she had stenosis, and we did actually two separate small incisions and decompressed the two levels, and she did wonderful.

This has to be very rewarding for you and for your team, because living with chronic pain is a horrible thing for so many people, and for you to be able to relieve that pain for your patients has to be truly rewarding.

It is, and that’s why I always tell all of our staff and not only in the OR but in our neuroscience center is to remember that a routine day for us is usually the worst day of a patient’s life.

Yes. We have only one more minute left. I’d love to put up a shot of the incision, and if you could tell us what we’re looking at here.

Dr. Sagee, my assistant, has closed the wound now, and now, as you can see, the incision is hardly visible, and he’s going to place, now, very small pieces of tape to sort of add a second layer of keeping the skin together. This is just a little adherent liquid that when it dries it’s very sticky, and he’ll place these small little pieces of -- it’s call “Steri-strips” to close it, and then a small dressing goes on.

Fabulous. I do want to remind everybody watching at home if you missed any part of this broadcast or if you would like to see it again, it will be streaming on OR Live and at BAPTISTHEALTH.NET. Dr. Sergio Gonzalez-Arias, thank you so much for letting us invade your privacy. Please tell your patient that we really appreciate it as well.

We will. Thank you.

And we hope going forward if you have health needs you will always consider Baptist Hospital. I’m Diane Magnum, that does it for now. We’ll see you next time.

Thank you.

Thank you for watching this OR Live program presented by Baptist Health South Florida. Watch and learn. This is OR Live.