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NICHOLAS U. AHN: The goal of today's talk, or my talk at least, is to give you a framework as to how to think about patients with back pain who present to you. Back pain, as you know, is very common. It's the second most common reason people see their primary care physician. So it's important to have some sort of framework as to how to deal with these patients and evaluate and treat them.

When I see a patient with back pain. I usually tell them that there's two types of pain that I take care of in terms of back problems. There's back pain and there's leg pain, and we're going to pretend like they're two entirely separate entities. So we'll first talk about leg pain.

The nerves in the low back run into the buttock, into the thigh, calf, and foot. And at every level, a different nerve innervates a different part of the leg. So if something, and it could be anything, presses on the nerve-- it could be a disc herniation, it could be a bone spur, it could be a cyst, could be a tumor-- if something is pressing on the nerve, it will cause pain to run down the leg and the distribution of the nerve that is being pinched. So leg pain-- this type of pain is also called radiculopathy, and leg pain is really a nerve problem.

So a lot of times patients will walk like this, bent forward to try to relieve the symptoms associated with a pinched nerve. Here's a patient with a disc herniation and a pinched nerve who has leg pain. Another patient with a disc herniation and a pinched nerve who has leg pain. But the key here is that leg pain is a nerve problem. Now by pain, I can mean pain, numbness, tingling, weakness, or any combination thereof. But we just kind of group that as leg pain just for ease of use. Leg pain is a nerve problem. It means a nerve is being pinched or irritated.

Now the pain that you get in your leg from a pinched nerve can be exquisitely painful. It's like the pain that you would get if you sit on the toilet for too long, and you're sitting on that nerve that goes down your leg. You're sitting on your sciatic nerve. Eventually, if you sit long enough, the pain will become intolerable, and you have to shift your weight or get off the toilet or something. But just imagine if you had that same pain that was going on for weeks, months, even years. You can see why these patients are in such distress. So leg pain, although maybe not that common, is exquisitely, or can be, exquisitely painful.

The other type of pain that we take care of is back pain. And back pain, well, the most common cause is a muscle strain, which we've all had at some point in our lives. But by definition, back muscle strains should resolve by about four to six weeks after the incident which takes place. And again, we're talking about back pain that does not radiate into the legs. So this is called axial back pain or mechanical low back pain. And again, it would be the type of back pain that you see on the left side of the picture, with back pain that does not run into the lower extremities. It's not radicular.

The most common cause of back pain, like we said, is a muscle strain, which should resolve by about four to six weeks. The most common cause of chronic low back pain lasting longer than that, we think, is a degenerative disc. So the disc is your cartilage cushion between your bones. When the disc wears out, you don't have the cushion anymore, and you have bone rubbing on bone. So degenerative disc disease is like a bone on bone type pain. It's a cushioning problem. It's not a nerve problem.

So here's a patient-- and you can see that the L4-L5 disc is black and degenerative. The cushion between the bones is lost. They don't have the same amount of cushioning that they have at the other levels. And this person has axial or mechanical low back pain, back pain that does not run into the legs. There is not much pressure on the nerve there. Here's another person with a degenerative disc, an axial or mechanical low back pain that does not run down the legs. So again, axial back pain is a cushioning problem. It's a problem with a disc. You've lost the cushion, so you have bone on bone.

Low back pain from degenerative discs is extremely common. God gives us one set of discs, and that's all you get throughout your life. And as they wear out, which happens even in me, with every tick of the clock, you will eventually have some back pain. So degenerative discs and back pain are extremely common. It is ubiquitous. It's been estimated that over 80% of people over the age of 50 will have a significant episode of back pain per two year period of time. It's that common. So if you're over 50 and you never have back pain, it's weird. I mean, it's weird in a good way, but it's unusual.

However, the back pain from a degenerative disc, by and large, is something that is very tolerable. Although it's extremely common, it's very tolerable. My dad is 82. Just by virtue of being 82, he has degenerative discs all the way up and down his spine, just by virtue of being on the planet for this long. But he runs every day, he plays tennis, he plays golf, he swims. The guy looks great. Does he have degenerative disc? Absolutely. Is the pain severe enough that it would warrant radical treatment, like surgery? Absolutely not. And the vast majority of people with back pain and degenerative discs have pain of that nature. It's a nuisance. Maybe it's worse when the weather is lousy, but it's not severe and unrelenting. To a certain extent, disc degeneration is a normal variant. It's something that happens to us with time. It's a normal part of getting older, just like white hair, wrinkles, et cetera.

So there's two types of pain. There's leg pain, which we said is a nerve problem, and there's back pain, which is a cushioning problem. Leg pain can be exquisitely painful. Back pain is typically very tolerable. So if someone has leg pain or radiculopathy, that just does not improve with non-surgical treatment, which they'll talk about later.

The treatment that we perform, the surgery that we use, is called a decompression. To compress means to a pinch, so to decompress means to unpinch. I'm simply taking the pressure off the nerve. Now it has terms like laminectomy and laminotomy and discectomy. And to me, those terms are like Ford, Toyota, and Saturn. The term decompression is like the term car. It's just a global term for taking the pressure off a pinched nerve.

And if a nerve is being pinched and I take the pressure off that nerve, it would stand to reason that the patient should improve. And that's what we see. For the most part, decompression for leg pain works very well. When I get off the toilet, my leg usually feels better. I expect it to. The insult has now been gone. And the success rate tends to be very high, about 80% to 85%.

Here's a patient with a disc herniation at a pinched nerve. The patient had leg pain that was unrelenting. We took the pressure off the nerve, and his leg pain predictably got better. This is a laminectomy. We open a space for the nerve by removing the bone. We identify the nerve and what's pressing on it, and we remove the offending fragment.

Now, some patients will ask me why it's not a guarantee. 80% to 85% is a lot of patients who will get better, but it's not everybody. And what I tell them is that when I take the pressure off the nerve, it is my most sincere hope that your nerve will heal. And when your nerve heals, you will feel better. But the nerve has to heal. I mean, that's how you get better. I can only take the pressure off the nerve. I can't make that happen for you. And in some instances, the nerve is so messed up that even though I take all the pressure off the nerve, it just doesn't get better. And it's always painful, and it's always weak. And that's why it's not a 100% guarantee.

So this guy's leg got crushed between a subway car, and these nice people took all the pressure off his leg as it was getting crushed. That's not a guarantee his leg will return to normal. The hope is that his leg will heal now that the insult is gone, but the leg has to heal before it gets better. And if the leg doesn't heal, he'll always have pain and disability from that.

Now really quickly, some patients will say, well, shouldn't I have surgery right away? Because I don't want my nerve to get so bad that it's beyond repair, even with an operation. I don't want it to be permanent damage to my nerve that even surgery can't fix. And the answer is not necessarily. So if you have surgery within two years of onset of radicular symptoms, if it's within two years of onset of symptoms, the success rates are really not much different.

So if someone comes to me with six weeks of leg pain, and six weeks is a long time to live with pain. I mean, two days is a long time to live with pain. But if someone comes to me with six weeks of leg pain, I'll tell them we don't have to do surgery right away. If I do surgery today, tomorrow, six months from now, a year from now, your success rate is about the same. You don't have to feel like you're under the gun to have surgery or you're being forced into an operation. A lot of patients will see us saying that someone told them they'll be in a wheelchair for the rest of their life if they don't have surgery right away, and that's not really true.

So the other type of pain is back pain, which we said is a cushioning problem. It's not a nerve problem. It's loss of cushion between the bones so you have bone rubbing on bone. It's extremely common, but remember what we said before about back pain from degenerative disc. It's typically very tolerable. Most people can totally live with it. And just think of my dad, OK?

But if someone has such bad pain that they fail everything else, and they need surgery, which is uncommon, the surgery that we would do is called a fusion. So now I'm going to glue your two bones together. And if I glue them together, there's no more bone rubbing on bone, right? So the pain should go away, it would stand to reason.

Now, first of all, it's a bigger surgery. Now I'm putting screws and rods and cages and a hardware store in your back, which nobody wants, myself included. And I tell all my patients, it's nice when all that's in you is you. You don't have all this junk in your back. Nobody really wants that. So number one, it's a bigger surgery. And number two, there is a fundamental problem with doing a fusion for back pain.

So here's a person who has a degenerative disc at one level. See that bottom disc is black and the cushion is gone, so someone did a fusion. Here's another fusion at the same level with a different type of device, but it's still a fusion. So the problem with doing a fusion is this. When I fuse your back together, I'm altering the biomechanics of your spine. I'm changing the way your back moves. And by altering your spinal biomechanics, I am creating a certain amount of back pain. When I fuse you, I am guaranteeing you you will have back pain. It is an expected outcome. And I am hoping that the pain that I give you by fusing you is less than the back pain that you had before the surgery from the degenerative disc. And that balance does not always work out in the patient's favor.

Remember what we said, back pain from disc degeneration, for the most part, is very tolerable. I'm taking a condition that, for most people, is very tolerable, and I'm doing a surgery that is guaranteed to give them exactly what they're complaining about, hoping it somehow works out in their favor. So there's a fundamental flaw in the thinking behind a fusion for back pain. Now the more levels I fuse, the more I'm altering your spinal biomechanics, and the more back pain I'm creating. So the more levels I fuse, the more back pain I'm creating, and the less likely it is that the balance between pain that I give you from surgery versus pain that you had before the operation is going to work out in the patient's favor. So long fusions for back pain are highly, highly frowned upon.

For those of you who watch football, I tell people the discs in your back are like your offensive line. Each one takes a certain amount of stress. Each guy blocks for the quarterback, so the defense doesn't kill him. If I fuse a level, that disc, that offensive lineman, is now out of the picture. It's like an offensive lineman got hurt, so I just removed him from the game. Well he might not hurt anymore, but the remaining four guys are going to take a lot more stress, and they're going to hurt more. If I fuse two levels, it's like getting rid of two of the guys. Now I only have three guys left to protect the quarterback, and they're going to get beaten up that much more. The more levels I fuse, the fewer discs remain to take all that stress, and the more pain I am creating.

Now remember what we said before is that disc degeneration is kind of a normal variant. It's like doing surgery for something that we expect to occur with time. Now we do fusions for different reasons. You know, yesterday I did a fusion for scoliosis. Dr. Gordon did a surgery yesterday for instability, or spondylosis. We do fusions for infections and tumors and all kinds of stuff. And it's not really all that controversial when we do a fusion for that reason.

If we do a fusion for disc degeneration and low back pain, specifically for that reason-- and again, why is it controversial? Because disc degeneration is typically tolerable, and I'm doing a surgery that's going to give them exactly what they're complaining about. If I do a fusion for disc degeneration and low back pain, we have a special term for it. And that's called a discogenic fusion. So if you look at a paper, an article, that's what they're referring to when they say discogenic fusion. And the reason why the author is specifying that is because they understand it is a controversial thing to do, for exactly what we had talked about before.

The success rates of discogenic fusion decrease with the number of levels fused, like we had mentioned. So I have a few minutes left.

Let's say I have a perfect patient, who is a young, thin, healthy non-smoker. And the chances of me seeing that guy in clinic are about the same as me having dinner with Elvis. I don't see anybody like this in my clinic. But young, thin, healthy non-smoker with single level disease. So one disc is completely degenerative and shot. Every other disc looks just normal. So, I mean, this is like having dinner with Elvis and a unicorn. I would almost never see this guy.

But if I had this perfect patient, young, thin healthy non-smoker, single level disease, the ideal candidate for a discogenic fusion. And if I do a discogenic fusion, the success rate in that perfect patient is about two out of three. And that means that now I'm doing a much bigger surgery. Screws, rods, all kinds of stuff. And one out of three patients will wish they never met me at the end of the day. One out of three patients will be no better or worse than they were before the operation.

But the problem is that this is a perfect patient, right? So now what if they're older? Now we're down to 50%. They're obese. Now we're down to 40%. They're a smoker. And that kills you. Now we're down to, like, 20%. You have three bad discs, and we're going to do a three level discogenic fusion. Now you're down to about 10%.

So the problem with back surgery traditionally over the past 20 years is that there were far too many people doing discogenic fusions. Now people know me as a back doctor. So what do you think the chief complaint I get is? Back pain, right? Which we typically don't really treat aggressively or treat surgically. But if people are willing to operate on back pain, they'll find people who will eventually have surgery, and the problem is that the success rates of that type of surgery are very poor.

So what is the real treatment for back pain? There was a study out of Italy looking at people with back pain and what led to improvement. Number one and number two, which were way at the top of the list, were smoking cessation and routine aerobic exercise. By aerobic I mean more than just walking, something where you breathe hard, you work up a sweat, your heart rate goes up. Swimming, biking, elliptical trainer, jogging, Stairmaster, what have you. Not weight lifting, but cardio, at least three times a week, at least 30 minutes a session. By far those two things were more associated with improvements in back pain than anything else.

The second tier was weight loss and physical therapy. And by therapy, I don't mean seeing a therapist 10 times. I mean doing the stretches on your own twice a day every day.

The third tier was like pain management and injections and things like that. The fourth tier was probably, like, voodoo. And then way, way at the bottom was discogenic fusion surgery. So this is a surgery that should really be avoided. So when you see patients and you send them to us, and they have pure back pain, disc degeneration, no leg pain, no nerve compression, that's why we're not always being really aggressive with how we treat them. And we kind of preach conservative care. So I have 30 seconds and I finished, so I did it, Chris, all right? And thank you very much.