

## Spine Surgery for the Active Patient

Webcast

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Wellington Hsu, M.D.

Roberto Valencia

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### **Roberto's Story**

#### **Andrew Schorr:**

Advances in techniques for spinal surgery are helping patients to return to an active lifestyle--including sports--quickly and often with excellent long-term results. Coming up, Dr. Wellington Hsu will discuss these approaches, and a patient will share his story. It's all next on Patient Power.

Hello and welcome to Patient Power sponsored by Northwestern Memorial Hospital. I'm Andrew Schorr.

Well, I like to be a pretty active guy and go to the gym and run and do things with my kids, and many of my friends do too, and that's part of the enjoyment of life and of course [to] get a good night's sleep as well. Well, imagine if you develop back pain, spinal pain, and it was getting in the way of all that. You'd feel like it was really ruining your quality of life. What can be done? Now, there are a variety of approaches, but one approach now that continues to advance, is the choice of having specialized surgery for you, and can that allow someone to be active once again? We're going to learn about that today.

Let's discuss it first with someone who has experienced that. That's Roberto Valencia, who lives in the suburb of Kildeer northwest of Chicago. He's just, and I'll say just because I'm older, just 50 years old, has two teenage boys and has a pretty active job as well, where he travels, but he likes to work in the yard, play tennis, play golf. Let's go back to the fall of 2010, Roberto. I know you experienced some pain over the years with your back and had developed a condition, but you kind of kept going. But what happened in the fall?

#### **Roberto:**

In the fall I was playing golf one day and my condition got worse, to the point where I couldn't finish playing golf, and the pain was so severe I decided to go see a doctor to diagnose what my problem was.

#### **Andrew Schorr:**

Now, sleeping I understand was a problem too. Tell us about that.

#### **Roberto:**

The only way I could sleep was on my side. I would wake up at night sometimes, but lying on my back was very hard for me, and it was very uncomfortable, so I had nights where I would wake up in the middle of the night and try to figure out

how to get comfortable.

**Andrew Schorr:**

Now, as far as being an active guy, am I right, that when you're used to being active and then suddenly you're in a lot of pain it makes life a lot tougher?

**Roberto:**

Yes. And I'm used to working out in the yard with my wife and we enjoy time outside, but that was limited to about a half hour or so because I couldn't go any further. The pain would get worse as I spent more time outside.

**Andrew Schorr:**

So you go to the doctor, and you say, "What can be done?" What did the first doctor you saw about it say?

**Roberto:**

He just took an X-ray and diagnosed me with spondylolisthesis, which I have had for many, many years and referred me to a physical therapist and quite frankly just said, "You know, this is the way you're going to live for the rest of your life. You're going to have to adapt to it."

**Andrew Schorr:**

Now, I know there are conditions where unfortunately sometimes you have to accept that, but you were not ready to accept that evaluation at that point, were you?

**Roberto:**

No. I have to say that I have the luck of having the ability to get an annual physical at Northwestern Memorial Hospital every year, and my physical comes in April. And this year they normally call you and ask you what would you like to do, anything specific, and I said I'd really like to get an MRI and talk to a specialist and to get that second opinion and to really understand what was going on with me.

**Spinal Surgery to Relieve Back Pain**

**Andrew Schorr:**

And so you did get a second opinion and you actually saw a spinal specialist who we're going to meet, Dr. Wellington Hsu. So what happened in that interaction?

**Roberto:**

Well, they did the MRI in the morning. I met Dr. Hsu in the afternoon. He displayed on the screen exactly what my condition was and explained two to three things that we could do. One was physical therapy and then [to] evaluate where we're at and come back [and] maybe consider surgery. But then when he said surgery, I think the thing that made me feel better is when he said that back surgery today is not what it used to be many years ago. And so he showed me a web site of what was going to be done and he explained clearly what was going to happen during the surgery.

And I do have a father that suffers with back pain and he's a physician, and I took a week and asked some questions, looked at the web site, and, you know, thought about doing this. We never agreed to do it that day I met him, but a week later I just said, I feel very comfortable with him. He explained everything and I decided let's go ahead and do this.

**Andrew Schorr:**

And so in May of 2011 you had the surgery, couple of nights in the hospital, you had been in pain beforehand. Tell us about how you're doing now, afterwards.

**Roberto:**

I'm in seven weeks after the surgery, and after week two I was feeling extremely better. The only pain I was having was pain of the incision where the surgery was performed, but I kept looking, moving, bending to find the pain that I had in the back, and nothing. Did not have that pain at all. I stayed home for a total of four weeks. Did a lot of walking every day, and I met Dr. Hsu at six weeks, and we did another X-ray and everything was healing properly. I had to wait another five weeks for the bone to fully grow, and I could move up to a lot more strenuous exercise.

**Andrew Schorr:**

So I know you're not cleared for golf any time soon, but do you feel like the relief of pain and what you can look forward to, all this has made the surgery the right choice?

**Roberto:**

Oh, it's been a godsend. I mean, I'm in a better mood because I don't have the pain I had every day. Getting in and out of the car, you know, traveling, I don't have the inconvenience that I had in the past.

**Andrew Schorr:**

Good for you. Well, we're going to hear more from you in a minute, but I want to meet your doctor. We have Roberto Valencia's surgeon with us, a spinal surgeon who is really a subspecialist when you hear about all the work he's doing in the leading edge of spine surgery and repair, and that's Dr. Wellington Hsu. He is an orthopedic surgeon on the medical staff of Northwestern Memorial Hospital. He's an assistant professor of orthopedic surgery at Northwestern University's Feinberg School of Medicine.

So first of all, Doctor, you must feel great to hear a patient who was in a lot of pain and who was limiting his life and now you and he sat down, you made a recommendation that you thought was right for him and it's working out.

**Dr. Hsu:**

This is why I do what is best for patients, just like Mr. Valencia. Hearing his comments on how he did before and after surgery is what keeps me going and allows me to do the things that I do with enthusiasm. So, yeah, it warms my heart

to hear his story.

**Andrew Schorr:**

Now let's just understand his situation for a minute. So he had developed a condition, I forget the name of it. Maybe you can help me.

**Dr. Hsu:**

Spondylolisthesis.

**Andrew Schorr:**

Okay. So that was a problem in his spine that he acquired, so maybe the vertebrae were out of alignment and it just sort of got worse over time?

**Dr. Hsu:**

Yes. There are two small fractures in the spine that can be acquired through activity, usually when someone is an adolescent. And when we're all teenagers we kind of do crazy things and don't notice it, and these fractures develop. And for the most part it doesn't bother people because 6 percent of the population has this condition, but a subset of patients develop a more severe condition when the disks in between those bones start to become arthritic and then that can cause pain down the road.

**How Spinal Surgery has Progressed**

**Andrew Schorr:**

Now, you were able to do a surgery for him where you go in, in a minimally invasive way, not a big incision, but through the abdomen, and repair the spine and also inject a material in there that will grow new bone is my understanding. Did I get it right?

**Dr. Hsu:**

Yep, you did.

**Andrew Schorr:**

And this is sort of like the new area of spine surgery because when I think of [spine surgery], I think of major hardware, and I know that's sometimes called upon, but increasingly we're talking about smaller incisions, less trauma, less hardware, more precision, less blood, and also materials I know that you work on in your lab to grow new bone.

**Dr. Hsu:**

Yes, the technology that's been developed in spine [surgery] has been quite remarkable even in a very short time--within the last one or two decades--not only in hardware but in biologics as well. And we've learned that the biologic processes that involve--or that lead to very good long-term outcomes--are the ones that are very important. So a lot of researchers and a lot of surgeons have spent a lot of time in trying to understand what it is about biology, how we can help the patient's biology heal the part of the bone or the part of the disk that we want it to. And this

has led to very good outcomes.

**Andrew Schorr:**

So is that what's going on where Roberto talked a minute ago about his recovery times and things--he's got to give it a little time. Is that what's going on, is that you're actually giving--it's not just like a scar healing, but you have put material in his back that you're giving time to grow.

**Dr. Hsu:**

Absolutely, and that process takes time. Now, we're getting quicker with that over time, with the increasing amount of understanding that we have of these processes, but yeah that's exactly what's happening with Mr. Valencia. The healing process is an ongoing one. Although he feels quite good and I expect him to throughout the recovery process, I need to be able to ensure that the bone has formed within the place that I put it in and that will lead to the best long-term outcome outside of six months to a year.

**Andrew Schorr:**

So one would think this sounds very leading edge to me. This is the kind of thing that's done on high-end athletes, and not to put you down, Roberto, but I know you're not a professional athlete, so for Roberto and me and my buddies and my wife and her friends, is there a place for this with the right situation for us too, or do you have to be an NFL player?

**Dr. Hsu:**

No. So we've done a lot of studies on professional athletes within my institution that help us understand what people are capable of after spine surgery, and these surgeries can range anywhere from taking a disk out to cleaning out a nerve root or even a fusion procedure, and these protocols have allowed patients to understand what they can do after treatment. Because a common question is, "Well, what can I do, what can I eventually do after this surgery?" And everybody has different wishes. They either want to play golf or some want to get back to running, and some may want to be an active cyclist, and I think that knowing outcomes--from professional athletes in some of the research that we've done--has helped patients better understand this.

**Andrew Schorr:**

So this can apply to the common man or woman, if you will. Now, I know there are a variety of approaches and let's face it, surgery is scary and surgery or any intervention can have some risks. What Roberto was told first was, "Well, physical therapy is what we would recommend," and you may recommend that sometimes too or it's a starting point. How do you evaluate in an individual whether one of your latest approaches for surgery is appropriate?

**Dr. Hsu:**

Well, for most of the conditions in the spine, these are degenerative conditions or, in other words, they come from arthritis. So for a large percentage of people performing conservative measures such as physical therapy or taking anti-

inflammatory medications or having injections here and there can be very successful in treating pain for a period of time. And for a lot of these people, a lot of patients, they can avoid surgery. So surgery is saved for patients who have undergone the aforementioned remedies and haven't gotten significant relief, and if patients have a certain diagnosis that the evidence has shown to lead to excellent outcomes such as Mr. Valencia had, then that is when I recommend surgery or at least--at least talk about the option of surgery with each patient.

**Andrew Schorr:**

Okay. But I don't think Northwestern's philosophy is a rush to surgery.

**Dr. Hsu:**

Oh, absolutely not. I mean, there are certain conditions that need to be rushed to surgery, but those are few and far between and those are conditions that we are skilled at diagnosing. But, yes, for the most part patients can do quite well without surgery.

**Andrew Schorr:**

Now, [Roberto] was in the hospital for a couple of nights but sometimes it's even less, right?

**Dr. Hsu:**

Sure. Absolutely.

**Are You a Candidate?**

**Andrew Schorr:**

So it sounds to be very individualized. So what would be the typical workup? Roberto had an MRI. Is it typically that, or is it just a physical exam, or is it giving it time to see if it resolves itself with some of these other approaches, or is it all over the map?

**Dr. Hsu:**

No, for the most part spine patients or patients who have back pain or leg pain always get a full evaluation with a history, a full physical exam because we need to make sure that patients don't have weakness that would be an indicator of more severe nerve root compression. We usually take a set of X-rays because that is the test that tells us what the structure of the spine looks like, and then patients also usually get evaluated with an MRI which tells surgeons what the nerve roots and what the spinal canal looks like. And each these components are very important in determining which kind of surgery is best for each patient.

And then, after this evaluation, and then after hearing how long a patient has been in pain, what kind of remedies they have tried in the past and what their desires are, then we can come to a formal treatment plan. And this is individualized. Patients who want to get back to leading a very active lifestyle--like golf, cycling, running, that sort of thing--are different than those who just want to be able to

walk to the store. So we take each of these individualized concerns into account when talking about surgery.

**Andrew Schorr:**

Doctor, so it's individualized, as you say, but also these are elective procedures usually. Roberto elected to have surgery and he had seen another physician first. How do you feel about second opinions, whether people getting a second opinion based on what you told them first or them coming to you second?

**Dr. Hsu:**

I think second opinions are a great idea when it comes to complex diagnoses and complex treatments such as those in spine surgery. And there are many ways to skin a cat, as one would say, especially in spine conditions, and I think patients can often benefit from different types of approaches to the same diagnosis or the same problem. And it's really where the discussion and where the explanation of those diagnoses and the treatment will allow the patient to make an educated choice on what to do. And I think second and third opinions are very helpful in many ways.

**Andrew Schorr:**

And, Roberto, you did a lot of research. Again, you have a father who is a physician, you're a smart guy, you went on the internet, you asked questions, things were explained to you. So it sounds like you went into it with your eyes open and with confidence.

**Roberto:**

Absolutely. And to a point that was made before, when I met Dr. Hsu and he explained my condition, offering surgery was not the first thing he offered. He said, "Therapy, we can look at it." It was five, six weeks before we got to that. The other thing that he mentioned is that my problem was skeletal, not muscular, and I had gone to therapy and I was not feeling better. And so that kind of said something is not right, and after looking at his Web site and the video of how it was going to be done, that gave me confidence that this was what needed to be done.

**Spinal Surgery Research**

**Andrew Schorr:**

Doctor, you have told me that you are also doing research and something sounds really cool to me, I'm not sure many of us understand it, nanotechnology. Where does that come in to the spine?

**Dr. Hsu:**

So nanotechnology is a hot research topic in a number of areas in medicine, and where it comes into spine and orthopedics is the way we make synthetic carriers for different bone-healing substitutes. So we used to take the patient's bone graft. We used to harvest bone graft from the patient's hip and allow that to form bone over time, and that always worked quite well, but many patients would complain of pain where you harvested the bone graft, so--

**Andrew Schorr:**

And it's another incision.

**Dr. Hsu:**

Another incision, another surgery. There are some complications that have been reported from it, so this whole arena of research activity has gone to replacing this. And one more recent arena or I guess area of research is where nanotechnology can form synthetic carriers that are of the nanoscale. So nanotechnology refers to very, very small objects, objects that are formed from very small components. And we have found that these types of carriers interact with biologic cells and growth factors in a much more advantageous way than conventional carriers do, and they perform better both in preclinical and clinical studies. So we are actually working on a number of different molecules that will perhaps enhance the body's ability to build bone.

**Andrew Schorr:**

So the hope would be then when you fix something also that it can be strengthening and lasting.

**Dr. Hsu:**

Absolutely. Long-term outcomes.

**Andrew Schorr:**

All right. I was joking with Roberto before the program. He's 50. I said 50 is the new 30. You know, people are trying to be active. I mean, I think we all want to be like 95 and if it's our dying day to have played tennis that afternoon before we say sayonara. And so we're all trying to be active and have a life [without] pain, be in good shape, be active, do the things we like to do with the people we like to be with. Is the hope with orthopedics and with spine surgery that we can achieve this and do it in a less invasive way and in a strengthening way, like you talked about? Is that where we're headed?

**Dr. Hsu:**

Absolutely. You know, as physicians and surgeons we try to do better. You know, we can be very satisfied with the patients that we treat, but there is always room for improvement, and minimally invasive surgery is one way for spine surgeons to improve upon what we do. And unfortunately, not every patient is a candidate for minimally-invasive surgery or surgery that would allow him or her to get back to active lifestyles, but for the most part we have a lot more tools in our toolbox to offer patients now than we used to. And I think when the appropriate indications are there we have come a long way in improving active lifestyles for patients after surgery.

**Andrew Schorr:**

Doctor, I know you are joining us from a conference in San Francisco where you'll be speaking. Is Northwestern seen as a leader in this? Does your department and yourself, are you doing a lot of this?

**Dr. Hsu:**

Absolutely. Not only within orthopedic surgery and neurological surgery, but our research--I have a number of collaborators who specialize in bionanotechnology and stem cell research and growth factor production--where we collaborate on both a scientist and a clinician level to figure out solutions to problems. And it's through this collaborative effort at an outstanding institution such as Northwestern that I think we can provide the most efficient research and get down to the answers that we want.

**Andrew Schorr:**

Well, we wish you well with that.

**Roberto's Advice****Andrew Schorr:**

Roberto, it sounds like you went to the right place.

**Roberto:**

Oh, absolutely. Absolutely, and I've had several folks ask me what I've done and what they did, and I've been referring them to the Web site so they can see the kind of work that Dr. Hsu does.

**Andrew Schorr:**

Roberto, so there are people who suffer, whether they're 50 or 40 or 30 or 70, who want to be active. What advice would you give them? I mean, the decision they make is going to be theirs and it will be individualized and their condition, evaluation of that is going to be individualized, but just generally as far as a process in approaching this to see if there could be answers, how would you recommend they approach it?

**Roberto:**

All the information that we have today through the internet, you know, you can Google all this stuff these days, but in my case going to a top hospital like Northwestern was what made things a lot easier for me. We have the ability to go there. We get our physicals there. Go to the folks that are the experts at what they do. That would be my recommendation. There are a lot of people that don't have the ability to go there, but if they just research them and find out you can get good information of what can and cannot be done.

**Andrew Schorr:**

And then ask questions, I guess.

**Roberto:**

Absolutely. Absolutely. You know, I never rushed my decision. Dr. Hsu never rushed his decision. He [said], "Think about it," and I did, and after looking and asking, that's when I came back and said, let's get it done. Did it sound scary at first, surgery? It does. But after the explanation how it was going to be done, I felt very comfortable.

## **Outcomes After Surgery**

### **Andrew Schorr:**

Dr. Hsu, so I just want to talk about outcomes for a second. Now I know expectations are going to vary, and here we're hearing early on a great outcome with Roberto. But how do you manage expectations because I know people are different, people heal differently. It's hard to predict, but I know you have a lot of data in certain areas. So talk about outcomes for a minute and also outcomes from your institution.

### **Dr. Hsu:**

Yes. A lot goes into that. We see patients from all walks of life, those who are adolescents to those who are in their 90s, and every patient who walks in my door has different expectations in terms of not only surgery, spine surgery, but also nonoperative therapies such as physical therapy. And everybody has their preconceived notions. Everybody has sort of friends or family who have had spine surgery and have had either good or bad outcomes, and knowing where the patient comes from helps me manage their expectations on what they should have. So the patient background goes into that.

And the other is the diagnosis. People can have a back pain for a variety of reasons, anywhere from muscular problems, and Mr. Valencia has a structural problem, to a congenital condition, and these are wide-ranging diagnoses. And there are certain diagnoses that do very well from surgery, and there are others that don't. And we have very good evidence-based literature to now guide us in terms of surgeons to recommend certain kinds of treatment.

At our institution we work very hard in tracking clinical outcomes from all of our patients who undergo spine surgery, and the reason we do that is because we want to get better at what we're doing. And for the most part our patients do quite well, but in the rare occurrence that the expected outcome is not reached we want to know why, and at Northwestern we are very tuned in to giving the best options to patients in the long term.

### **Andrew Schorr:**

Again, it sounds like the field is changing, and as you mentioned, maybe people had a family member 20 years ago who had spinal surgery, and it's kind of like this is not like your grandfather's spinal surgery anymore.

### **Roberto:**

Absolutely.

### **Andrew Schorr:**

Yeah, it's changed quite a bit.

## **Closing Comments**

**Andrew Schorr:**

Well, Roberto Valencia, all the best to you, back to work, flying around and doing business, but also yard work and golf in the foreseeable future, right?

**Roberto:**

Absolutely. Absolutely.

**Andrew Schorr:**

Okay. All the best to you, Roberto.

**Roberto:**

Thank you, Andrew.

**Andrew Schorr:**

Thank you for being with us. Dr. Wellington Hsu, thank you. Give a good talk there in San Francisco to your peers, and thanks for the work you're doing and your colleagues at Northwestern Memorial and for helping people like Roberto. I hope I don't need your services someday, but if I do, [I'll] come for an evaluation. But no matter what, it seems like it gives a lot of us hope of, well, maybe that tennis game when we're in our 90s [is possible]. So thank you so much for being with us as well.

**Dr. Hsu:**

Thank you, Andrew.

**Roberto:**

Thank you.

**Andrew Schorr:**

This is what we do on Patient Power, folks, and it's great to hear an inspiring story like Roberto's and to meet somebody who is really on the leading edge of medicine like Dr. Wellington Hsu at Northwestern.

Thank you so much for joining us. I'm Andrew Schorr. Remember, knowledge can be the best medicine of all.

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