UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE PATENT AND TRIAL APPEAL BOARD

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| ALPHATEC HOLDINGS, INC., | Case Nos. | IPR2019-00361 |
| And ALPHATEC SPINE, INC., | | IPR2019-00362 |
| Petitioners, | | IPR2019-00546 |
| Vs. | Patent Nos. | 8,187,334 |
| NUVASIVE, INC., | | 8,361,156 |
| Patent Owner. | | 8,187,334 |

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Deposition of

Matthew Link

Tuesday, January 7, 2020

Reported by:

JOSHUA MANEA, CSR No. 13754

Job No: 596168

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Exhibits

Deposition of Matthew Link

January 7, 2020

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| Exhibit 2 | Declaration of Matthew Link in IPR2019-00362 case, 12 pgs | 5 |
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BE IT REMEMBERED that on Tuesday, January 7, 2020, commencing at the hour of 9:35 a.m. in the law offices of Mintz, Levin, Cohn, Ferris, Glovsky & Popeo, PC, 3580 Carmel Mountain Road, Suite 300, San Diego, California, before me, JOSHUA MANEA, a Certified Shorthand Reporter in and for the State of California, personally appeared

MATTHEW LINK

Called as a witness herein, and after having been first duly affirmed to tell the truth, the whole truth, and nothing but the truth, was examined and testified as follows.

--oOo--

EXAMINATION BY MS. WICKRAMASEKERA:

**Q. Good morning, Mr. Link.**

A. Good morning.

**Q. You understand, you are here to testify regarding -- you are here to testify in the proceedings that are before the patent office, case number IPR2019-361, 362 and 546, regarding the 334 and 156 patents; is that correct?**

A. That is my understanding, yes.

**Q. Okay. Let's go ahead and mark your declarations; for the record.**

(Exhibits 1, 2 marked for identification.)

BY MS. WICKRAMASEKERA:

**Q. I'm going to show you what's been marked as Exhibit 1, which is the declaration you submitted in the 361 proceeding for the 334 patents.**

A. Okay.

**Q. As Exhibit 2, I'm handing you what's been marked -- I'm sorry. As Exhibit 2, I'm handing you your declaration in the 362 proceeding for the 156 patents.**

(Exhibit 3 marked for identification.)

BY MS. WICKRAMASEKERA:

**Q. And Exhibit 3 is your declaration in the 546 proceeding for the 334 patents. Here you go.**

**And Mr. Link, are these declarations that you**

**submitted in the three proceedings, are they substantively identical?**

A. It is my understanding that they are substantively identical, yes.

**Q. And did you review the 334 and the 156 patents in preparing your declarations?**

A. I did not review those specifically. I relied on information, I believe, was provided by Jim Youssef and it was related to those patents.

**Q. Okay. And what did you understand, from Dr. Youssef, the 156 patent covers?**

A. I don't -- I don't know the numeric assignment to the specific patents. If you have that, I am happy to take a look at it. My general understanding?

**Q. Sure. I can mark the - if it is easier, I'll go ahead and mark the patents for you.**

(Exhibit 4 marked for identification.)

BY MS. WICKRAMASEKERA:

**Q. So as Exhibit 4, I'm handing you what's been marked as the -- I keep doing this wrong. I'm handing you the 156 patent that I've marked as Exhibit 4.**

A. Okay.

**Q. There you go.**

(Exhibit 5 marked for identification.)

BY MS. WICKRAMASEKERA:

**Q. Exhibit 5, which I'm handing you, is the 334 patents.**

**Do these look familiar to you?**

A. Yes, they lock generally familiar. Yes.

**Q. Okay.**

A. So, again, dc you mind repeating the question?

**Q. Sure. For the -- I'll start with the 334 patent. I'm not sure which one I started with earlier. For the 334 patent, what did you understand, from Dr. Youssef, this patent covers?**

A. So, again, nct being an attorney or expert in this field, my general understanding is that this patent covered claims related to the CoRoent implant.

**Q. Okay. Did you believe -- same question for the 156 patent. Based on your -- your understandings, from Dr. Youssef, what did you understand the 156 patent to cover?**

A. So similarly, understood it to cover claims related to the CoRoent implant.

**Q. Okay. How many different versions of the CoRoent implant are there?**

A. I don't know, off the top of my head.

**Q. Okay. You are familiar with the CoRoent XL, correct?**

A. I am familiar with CoRoent XL, yes.

**Q. And is that implant, the CoRoent XL, only used for lateral procedures?**

MR. ROSATO: Objection. Form.

THE WITNESS: In my experience, I have only observed it being utilized for lateral procedures.

BY MS. WICKRAMASEKERA:

**Q. Okay. Can you tell me, one way or the other, whether it has been used in non-lateral procedures?**

A. I do not know conclusively if it has or has not.

**Q. Okay. Are you familiar with the CoRoent XLR?**

A. The CoRoent XLR? I'm not sure I'm familiar with that one.

**Q. Did I stump you?**

**Are you familiar with the CoRoent XL implant that was the assignment for anterior procedures?**

A. Yes. I don't recall as having the designation of R, but I'm familiar with the CoRoent implant that is designated for anterior approaches.

**Q. Okay. And do you know, structurally, how the CoRoent design for anterior differs from the CoRoent design for lateral?**

A. Again, I'm nct an expert in that field. I'm not sure I'm qualified to answer that question.

**Q. Well, I'm just asking if you know. If you**

**don't know, that's okay.**

A. I believe I answered that.

**Q. So is the answer that you don't know?**

MR. ROSATO: Objection to form.

BY MS. WICKRAMASEKERA:

**Q. I guess, I'm not trying to trick you and I'm not, actually, asking for opinion testimony. I'm asking if you know -- do you know, structurally, any differences between the CoRoent that's used for lateral and the CoRoent that's used for anterior?**

A. And based on my experience, I understand those two implants to be different in geometry.

**Q. Okay. How?**

A. Within the geometry of length and width.

**Q. So the CoRoent that's used for anterior has a different length than the CoRoent that's used for lateral?**

A. The --

MR. ROSATO: Objection to form.

THE WITNESS: Again, in my experience and familiarity with our implants that are in those categories for anterior ALIF surgery versus lateral surgery, the relative dimension of the length to the width are proportionately different in those two implant types.

BY MS. WICKRAMASEKERA:

**Q. Okay. And what are you referring to as to the length to the anterior -- CoRoent anterior implant?**

A. I'm sorry. I don't understand your question.

**Q. What's -- is the -- when the CoRoent anterior implant is in place, once it's been inserted, which direction does the length go in? Is it the anterior-posterior direction or the lateral direction?**

MR. ROSATO: Objection to form.

THE WITNESS: Yeah.

MR. ROSATO: Foundation.

THE WITNESS: My understanding of it is the lateral direction.

BY MS. WICKRAMASEKERA:

**Q. Okay. And what's the -- what's the greatest length for the anterior implant?**

A. I don't know.

MR. ROSATO: Objection to form, foundation.

THE WITNESS: I don't recall what the greatest length is, off the top of my head. If there's a reference, so I'd be happy to review it and see if it is familiar, based on past experiences.

BY MS. WICKRAMASEKERA:

**Q. Do you know what the anterior-posterior depth of the anterior CoRoent implant is?**

MR. ROSATO: Objection to form, foundation, scope.

THE WITNESS: The anterior CoRoent implant, again, there is a range of depths associated with that implant. I don't recall what those are, off the top of my head, no.

BY MS. WICKRAMASEKERA:

**Q. Okay. Would the anterior-posterior depth of the lateral implant, the lateral CoRoent implant, necessarily be different from the depth of the CoRoent anterior implant?**

MR. ROSATO: Same objection.

THE WITNESS: Yeah, so if we are talking about the CoRoent XL lateral implant, at least is my understanding as we have categorized that, the primary implant for the lateral XL implant is 18 millimeters in depth or width, if you want to categorize it that way, so anterior to posterior.

BY MS. WICKRAMASEKERA:

**Q. And is that 18 millimeters, is that an anterior-posterior depth that's unique to lateral implants?**

MR. ROSATO: Objection. Form, foundation.

THE WITNESS: Again, based on my understanding and experience at the time it was introduced, it was

unique to implants, lateral implants, yes.

BY MS. WICKRAMASEKERA:

**Q. Do you know whether the CoRoent XLR is available in an 18 millimeter anterior-posterior depth?**

A. I don't recall, off the top of my head, no.

**Q. Any other structural differences you can think of between the CoRoent XLR for anterior and the CoRoent XL?**

MR. ROSATO: Objection. Form.

THE WITNESS: Again, as I answered previously, my recollection of the primary differences between the implants, from my observations, are the proportion, sort of, the relative dimensions anterior to posterior to lateral.

BY MS. WICKRAMASEKERA:

**Q. Okay.**

A. I guess, actually, and that observation categorized maybe better, the proportion of those dimensions, one implant, as I understood it, was defined to be wholly contained within the disc space versus another that was designed to be able to bridge across the end plates of the disc space. And so the intended clinical application, I understood to be different.

**Q. Okay. What ranges of lengths is the CoRoent XL available in?**

MR. ROSATO: Objection to form.

THE WITNESS: Yeah. So as I recall, the ranges of lengths were 40 to 55 millimeters with a line addition sometime -- I don't remember exactly when -- I believe, it extended that length out to 60 millimeters.

BY MS. WICKRAMASEKERA:

**Q. Are you referring to the CoRoent XL standard?**

A. I'm referring to the CoRoent lateral implant.

**Q. Okay. Don't you also have a thoracic implant that's CoRoent XL?**

A. I don't believe that was the naming nomenclature. I believe that was XLT. And so since you made it a point to characterize XLR as a different implant, I thought we were going to continue down that line.

**Q. Oh. I'm sorry if I confused you.**

**From my understanding, XLR is the anterior implant.**

A. Right.

**Q. And so that's correct?**

A. Yes.

**Q. And the CoRoent XL comes in standard and thoracic; is that correct?**

A. And, again -- yeah. And so I'm -- the -- as I understand the naming nomenclature, it is XLT.

**Q. Okay.**

A. And so since you made it a point to designate the XL implant as XLR, I wanted to be as specific as possible.

**Q. Did that name change at some point?**

A. I believe it may have changed, but given I have been with the company since 2007, that's the nomenclature I'm familiar with.

**Q. Okay. Is the CoRoent XLT for lateral insertion?**

MR. ROSATO: Objection to form.

THE WITNESS: As I understand it, it was designed for lateral insertion, yes.

BY MS. WICKRAMASEKERA:

**Q. Do you know what the greatest length of the CoRoent XLT is?**

MR. ROSATO: Objection to form, scope.

THE WITNESS: Yeah, I don't recall, with certainty, what the maximum length was. I believe it to be 40, but I'm not 100-percent certain on that.

BY MS. WICKRAMASEKERA:

**Q. That's my understanding as well.**

**To insert a CoRoent XLT laterally, you don't have to go through the psoas muscle, correct?**

MR. ROSATO: Objection. Form, foundation.

THE WITNESS: It depends on which anatomic level you choose to insert it.

BY MS. WICKRAMASEKERA:

**Q. In the lower thoracic, do you necessarily have to go through the psoas muscle?**

MR. ROSATO: Objection to form, foundation, scope.

THE WITNESS: So in the lower thoracic spine, that would not be typical anatomy to traverse, no.

BY MS. WICKRAMASEKERA:

**Q. Okay. Are you familiar with where the markers are located in the CoRoent XLT?**

MR. ROSATO: Objection to form, foundation and scope.

THE WITNESS: I do not recall all of the exact locations, no.

BY MS. WICKRAMASEKERA:

**Q. Okay. In your -- actually, let me ask you a few more questions about the patents.**

**For the 156 patent, is it your understanding that the patent requires going through the psoas muscle?**

MR. ROSATO: Objection to form, foundation and scope.

THE WITNESS: Yeah, I'm not an attorney. I don't have a complete understanding as to what all the

specific claims and requirements are of that.

BY MS. WICKRAMASEKERA:

**Q. Okay. So based on your conversations or your understanding from reading Dr. Youssef's declaration, do you have any understanding, based on that, whether the claims for either patent require you to go through the psoas muscle?**

A. Yeah, again, so per my declaration, it is my understanding that, based on Dr. Youssef's expert opinion, that it -- that, you know, there are certain areas of claims. I am not qualified to characterize all of those things specifically.

**Q. In various parts of your declarations, you refer to the nerves of the psoas muscle and creating a corridor through the psoas muscle. And I'm just wondering why you thought that was relevant to put in your declaration?**

A. Do you mind pointing out specifically --

**Q. Sure.**

MR. ROSATO: Let me get my objections. Objection to form, foundation.

BY MS. WICKRAMASEKERA:

**Q. Okay. So you can look at paragraph 5 of your declaration.**

A. I'm sorry, paragraph 5?

**Q. Yes. Let me know once you've had a chance to review it.**

A. So as I read paragraph 5, it is in a section related to NuVasive and XLIF history, and as I read the paragraph, in my recollection at the time is when asked to provide a characterization of, you know, what the XLIF procedure is, that's a relevant component of the procedure -- or a relevant consideration in the approach related to the procedure.

**Q. Let me back you up to paragraph 3. You define XLIF, as you've used it throughout your declaration, as "NuVasive's eXtreme Lateral Interbody Fusion, products and systems." Do you see that?**

A. I see in paragraph 3 where it says that, yes.

**Q. Okay. Can you tell me what's all included in that, what products and systems are you referring to?**

MR. ROSATO: Objection to form.

THE WITNESS: So a general characterization of the products and technclogies associated with that portfolio. Portfolio being the eXtreme Lateral Interbody Fusion.

Again, from my tenure at the company, which is 13 years, has been a series of retractor systems, dilating tools associated with retractor system. Sub -- some components of an automatic nerve physiology system.

Instrumentation associated with addressing spinal anatomy, particularly the disc, space, as well as a number of interbody devices and fixation options for the lateral procedure.

BY MS. WICKRAMASEKERA:

**Q. Okay. So when you are referring to XLIF throughout your declaration, you are referring to all of these systems and products that you just mentioned?**

MR. ROSATO: Objection to form.

THE WITNESS: Again, I think it would depend on the specific context of wherever the statement lies. But as I just stated, generally speaking, those would all be technologies and components that comprise some portion of a XLIF procedure.

BY MS. WICKRAMASEKERA:

**Q. If you already were referring to the implant specifically in your declaration, would you have called it "XLIF" or would you have called it the "CoRoent XL implant"?**

MR. ROSATO: Objection to form, foundation.

THE WITNESS: Is there a specific segment you are referring to where I've categorized it one way or the other?

BY MS. WICKRAMASEKERA:

**Q. Well, I was just asking based on your answer**

**that if you used XLIF, it would depend on the context. And what I'm just trying to understand is, you have used "XLIF" throughout your declaration. And I understood from paragraph 3, you were defining "XLIF" to be NuVasive's Extreme Lateral Interbody Fusion products and systems. So are you using a different definition of XLIF anywhere else throughout the declaration?**

MR. ROSATO: Objection to form and foundation.

THE WITNESS: Yeah, I don't recall. Again, if there is an area of specific question, I'd be happy to read it and address it. I don't recall any specific example.

As I look through the declaration, I also see specific reference to the CoRoent XL implant, in addition to XLIF. So it would be helpful if you could maybe highlight a specific area where you have a question.

BY MS. WICKRAMASEKERA:

**Q. Okay. How about paragraph 4. In the middle of the paragraph, you state, "When NuVasive began development of XLIF." Do you see that?**

A. "When NuVasive began development of XLIF," in paragraph 4, yes, I do.

**Q. Yes. When did NuVasive begin development of XLIF?**

A. So the development of XLIF predates my time with the company. The procedure had already been launched and commercialized when I joined in 2006. Based on my experience and understanding from others in the company -- I mean, to some extent, the development of XLIF began as early when the company was founded. They began seeking an alternative minimally-invasive solution for the spine. And there was a series of developments.

But, I guess, my general understanding was in or around, you know, 2001, in that general time period. But, again, that predates my time with the company. I don't know specifically.

**Q. Okay. And then when you are saying, "When NuVasive began development of XLIF," what specifically are you referring to in that sentence as "XLIF"? What products, I guess? What -- what -- what products specifically are you referring to --**

MR. ROSATO: Objection to form.

BY MS. WICKRAMASEKERA:

**Q. -- in that sentence?**

A. So my recollection at the time of this statement would have been related to the products and technologies that I referenced earlier. So a series of retractor systems, dilating tools to support the

retractor system, implant -- interbody-implant options or solutions, lateral-fixation solutions and a subset of neurophysiology technology to support the procedure.

**Q. When specifically did NuVasive begin development of the CoRoent XL implant?**

A. I don't -- I don't know. And so when you -- I just want to clarify, when you say "CoRoent" -- you said "CoRoent XL implant"?

**Q. Yes.**

A. I don't know, off the top of my head, specifically.

**Q. Do you know who specifically developed the CoRoent XL implant?**

MR. ROSATO: Objection to form.

THE WITNESS: I don't know who is specifically responsible for it, no.

BY MS. WICKRAMASEKERA:

**Q. Do you know how long it took to develop the CoRoent XL implant?**

MR. ROSATO: Objection to form and foundation.

THE WITNESS: I do not.

BY MS. WICKRAMASEKERA:

**Q. Okay. In paragraph -- actually, stay with paragraph 5. At the end of paragraph 5, you state that, "NuVasive built and tested an array of specialized**

**instruments and surgical components, e.g., MaXcess retractor, neuromonitoring-equipped dilators, specially-constructed implants, to enable the XLIF surgical approach." Do you see that?**

A. I do see that, yes.

**Q. What -- how -- when you refer to "specially-instructed implants," what do you mean?**

A. So, again, my understanding of the evolution of the development process included an implant that could be optimized based on lateral insertion and the geometry associated with the available anatomy or anatomic access from a lateral approach.

**Q. What -- what sources of information did NuVasive draw on to develop the CoRoent XL implant, if you know?**

A. I do not know.

**Q. Do you know whether they -- NuVasive was looking at other implants that were available in the market at the time?**

MR. ROSATO: Objection to form and scope.

THE WITNESS: I'm sorry. My -- my knowledge at the time was that they -- that there was some instances where allograft implants were utilized in a lateral approach and were found to be suboptimal, based on the -- the footprint or dimension of that implant in

the disc space.

That's the extent of my knowledge around implants associated with, again, what I understand to be the development of XLIF being the tools and technologies developed by NuVasive.

BY MS. WICKRAMASEKERA:

**Q. Are you familiar with the work of Dr. Crock (phonetic)?**

A. I'm sorry?

MR. ROSATO: Objection to form.

BY MS. WICKRAMASEKERA:

**Q. Dr. Crock?**

A. I am not, no.

**Q. Okay. Who are you referring to when you are referring to prior insertion of allograft implants in a lateral approach, who's work are you referring to?**

A. I'm not referring to any one surgeon, in familiar. I'm referring to information and education I received when I joined the organization and in support of the rationale for the CoRoent XL implants and the advantages it offered relative to other implants that were available in the market at that time.

**Q. Was NuVasive aware of artificial implants being used in spinal fusion surgery before it developed CoRoent XL?**

MR. ROSATO: Objection to form, foundation.

THE WITNESS: I'm sorry. What do you mean by "artificial implants"?

BY MS. WICKRAMASEKERA:

**Q. Non-bone.**

MR. ROSATO: Same objection.

THE WITNESS: Again, I wasn't at NuVasive at the time that they initiated development of that implant.

MR. ROSATO: Excuse me. There is a scope in the objection, please. Thank you.

BY MS. WICKRAMASEKERA:

**Q. How were the -- was NuVasive aware of the publications regarding Dr. Brantigan's use of non-bone implants in spinal fusion surgery before it developed the CoRoent implant?**

MR. ROSATO: Objection to form, foundation, scope.

THE WITNESS: Again, I wasn't present. I wasn't part of the organization at that time, so I do not know.

BY MS. WICKRAMASEKERA:

**Q. Okay. In paragraph 8, you refer to, "NuVasive's initial expenditures for the development of XLIF that were approximately $20 to $30 million." Do**

**you see that?**

A. Paragraph 8? I do see that, yes.

**Q. Okay. How much of that specifically was attributed to the CoRoent XL implant?**

A. I do not know how much was directly attributed to CoRoent XL.

**Q. I'm going to have you flip, just quickly, over to paragraph 16 in your declaration. And I'm going to refer you to the -- sort of the middle of the paragraph and it starts, "As of the end of 2017." Do you see that?**

A. I'm sorry. To?

**Q. Paragraph 16.**

A. Yes.

**Q. And it is just -- it is towards the middle of the paragraph. There is a sentence that starts, "As of the end of 2017." Do you see that?**

A. I do see that, yes.

**Q. Okay. So in paragraph 16 of your declaration, it states that, "As of the end of 2017, the CoRoent XL implant had generated about 400 million in revenue for NuVasive." Do you see that?**

A. I do see that, yes.

**Q. And you note in a footnote, "These revenue numbers are for the 18-millimeter-wide CoRoent XL**

**implant." Do you see that?**

A. I do see that, yes.

**Q. Do you have any understanding as to what drove the sales of the CoRoent XL implant --**

MR. ROSATO: Objection to form.

BY MS. WICKRAMASEKERA:

**Q. -- that you are referring to here?**

A. I'm sorry?

**Q. That's okay. Maybe I asked that in a confusing way.**

A. Yeah.

**Q. Let me ask you this question: In reference to the sentence that I just read in your declaration in paragraph 16, do you have any understanding as to whether it was demand specifically for the CoRoent XL implant as opposed to some other component of XLIF that drove this $400 million sales figure?**

MR. ROSATO: Objection to form.

THE WITNESS: So it is my understanding, based on financial informaticn provided to me in support of this statement, as well as my own experience, that the revenues attributed to the CoRoent XL implant in that -- again, in my experience, the CoRoent XL implant afforded a clinical advantage in terms of its biomechanical stability relative to smaller implants. And that that

was a driving factor in the utilization of an implant like that.

And I believe, in my experience, NuVasive invested in biomechanical data in support of those facts, to also then support the marketing and promotion of that implant in the market.

BY MS. WICKRAMASEKERA:

**Q. Do you think any of the 400 million in revenue for the CoRoent XL 18-millimeter-wide implant was driven by anything other than the CoRoent XL implant?**

MR. ROSATO: Objection to form.

THE WITNESS: I'm not sure I understand what you mean by "driven."

BY MS. WICKRAMASEKERA:

**Q. Well, do you -- do you think that the demand from -- from surgeons, for the CoRoent XL implant that's reflected in the $400 million number that you provided, do you believe that that's due solely to the CoRoent XL implant or could it also be due to the MaXcess retractor?**

MR. ROSATO: Objection to form.

THE WITNESS: So, again, as I understand it, the $400 million is revenue is attributed directory to the CoRoent XL implant. Theoretically, per a surgeon's discretion, they could place another implant as an

alternative. Yet, this was the implant they chose.

And so I believe as it relates to this statement, again, it is attributed -- the revenue is attributed directly to the implant. And there, I think, was a consistent demonstration from the surgeon community for a preference for that implant.

BY MS. WICKRAMASEKERA:

**Q. Okay. So do you believe that the sales revenue, that you've mentioned here in paragraph 16 for the CoRoent XL implant, reflects in any way a demand for the MaXcess retractor?**

MR. ROSATO: Objection to form.

THE WITNESS: So, again, as I understand this, this is revenue attributed directly to the CoRoent XL implant. And we have categorization with other products that would be reflective of the retractor utilization. And so as it relates to this $400 million, I believe it is a reflection of revenues related directly to the implant.

BY MS. WICKRAMASEKERA:

**Q. Okay. And then it does not reflect any demand for the MaXcess retractor; is that correct?**

MR. ROSATO: Objection to form, asked and answered.

THE WITNESS: The 400 million is directly

attributed to product SKUs associated with the CoRoent XL implant, as I understand it, based on the financial information provided.

BY MS. WICKRAMASEKERA:

**Q. If you turn back to paragraph 6.**

A. I'm sorry? You said paragraph 6?

**Q. Yes. You say, "Prior to XLIF, there were different procedures available for treating patients in need of spinal fusion that suffered from their own drawbacks." Do you see that?**

A. I see the sentence, yes.

**Q. Are you referring to lateral in that -- in that sentence as different procedures that were available?**

MR. ROSATO: Objection to form.

THE WITNESS: So my recollection at the -- the time this statement, that I was referring to a wide range of procedural alternatives to what we have categorized as XLIF.

BY MS. WICKRAMASEKERA:

**Q. That would include other lateral procedures?**

MR. ROSATO: Objection to form.

THE WITNESS: It could be -- it could be inclusive of other lateral procedures, but not exclusive to that.

BY MS. WICKRAMASEKERA:

**Q. And in paragraph 7, you state, "NuVasive recognized the unmet need for an effective spinal fusion surgery without the disadvantages of these earlier procedures." Who -- who specifically at NuVasive recognized that need?**

A. Again, I wasn't at NuVasive during the time period in which, yeah, the development of XLIF began. During my long tenure at the organization, I understood it to be a combination of -- a combination of people, both within NuVasive as well as, potentially, clinicians.

**Q. Is it your testimony that NuVasive was the only entity to recognize that need at that time?**

MR. ROSATO: Objection. Form, foundation.

THE WITNESS: I don't know that to be true or not.

BY MS. WICKRAMASEKERA:

**Q. Okay. Further down in paragraph 7, you refer to "when NuVasive invented XLIF."**

A. I'm sorry?

**Q. Did I say paragraph 9? I meant to say paragraph 7.**

A. Okay. Paragraph 7.

**Q. The last sentence.**

A. Yeah, I got you. Okay.

**Q. You see it? So in paragraph 7, you state, "That changed, however, when NuVasive invented XLIF." Do you see that?**

A. I do see that, yes.

**Q. Okay. What did you mean by "when NuVasive invented XLIF"? What are you referring to there?**

A. Again, my recollection from the time of this declaration and in general, how I've referred to XLIF is inclusive of the components we discussed previously, which would be access systems, tools to facilitate the access instruments to facilitate addressing the spine as well as the implants, which ultimately result in stabilization of the spine.

**Q. Okay. How do you know that NuVasive invented XLIF?**

MR. ROSATO: Objection to form.

THE WITNESS: Again, just based on my tenure with the organization and my experience in the spine market, having been at a competitive spine company at the time XLIF was intrcduced to the market. That is my understanding, both frcm within NuVasive, I've heard that certainly categorized that way by other leaders in the company at the time, including Pat Miles, Alex Lukianov, Keith Valentine.

So both from what I've heard from within the organization, from leaders that were involved with the development of XLIF as well as my observation in the marketplace as a competitor and within the organization.

BY MS. WICKRAMASEKERA:

**Q. Did you ever hear Pat Miles say he invented CoRoent?**

A. I don't recall hearing him say specifically he invented CoRoent. Although, I -- again, I'm not an expert. I thought he was party to the patents associated with the implants, but that's just my general recollection. That's not necessarily a read of the patent.

**Q. Do you believe that Pat Miles invented CoRoent?**

MR. ROSATO: Objection. Form, foundation and scope.

THE WITNESS: Again, as I understand the development, I believe he was party to those developments, based on his role at the time as the head of marketing and product and technology. But I also understood it was others who may, or likely had, contributed to that.

BY MS. WICKRAMASEKERA:

**Q. Go ahead and turn to paragraph 9.**

A. I'm sorry? 9?

**Q. Yeah, 9 of your declaration.**

A. Yes.

**Q. You have excerpts there, a figure from the patents, Figure 2?**

A. Yes.

**Q. And you have some photograph -- a photograph of the CoRoent XL implants. Do you see that?**

A. I do, yes.

**Q. Okay. And below that, you have a heading titled "Skepticism regarding XLIF and CoRoent XL implant." Do you see that?**

A. I do, yes.

**Q. Okay. What skepticism was expressed -- well, actually, withdrawn.**

**Let me ask you this question: Was any skepticism expressed to NuVasive regarding the construction of an implant made of PEEK?**

MR. ROSATO: Objection. Form, foundation.

THE WITNESS: I don't recall hearing an objection to an implant made of PEEK, in my own experience. And I don't recall having heard that accounted from others.

BY MS. WICKRAMASEKERA:

**Q. Okay. Do you recall anyone expressing any**

**skepticism at the time of using a spinal fusion implant of non-bone construction?**

MR. ROSATO: Objection to form, foundation.

THE WITNESS: I don't recall an objection related to a non-bone product. And as stated in the declaration, the primary skepticism was around the size and dimension of the implant relative to implants that were available in the market.

BY MS. WICKRAMASEKERA:

**Q. And by "size," you are referring to only the width or are you referring to the length as well?**

A. In -- in my experience, width was a concern.

Length, relative to how we suggested the -- or, again, at least in my experience, marketing and promoting the device, the sort of recommended length to optimize the stability and stabilizing the interbody space.

**Q. That was a concern -- that length was a concern? I'm sorry. I might have missed the first part of your answer there. I did understand you to say that width was a concern; is that correct?**

A. Yes.

**Q. And as for length, I believe you testified that it was a concern to determine the length to optimize the stability and stabilizing the interbody**

**space; is that correct?**

A. Correct.

MR. ROSATO: Objection to form.

BY MS. WICKRAMASEKERA:

**Q. Okay. Was NuVasive aware of the use of interbody implants that were longer than 40 millimeters, at the time it invented CoRoent?**

MR. ROSATO: Objection to form, foundation.

THE WITNESS: Again, I wasn't present when the development of CoRoent began, so I can't speak to whether or not they were aware of that or not.

BY MS. WICKRAMASEKERA:

**Q. Are you familiar with the BAK long cage?**

A. I'm not familiar with the BAK long cage. I'm familiar with the BAK cages that were traditionally used from a posterior approach and were shorter than 40 millimeters.

**Q. So you are not aware of the BAK long cage that were inserted in the lateral approach in the late 1990s?**

MR. ROSATO: Objection to form, foundation.

THE WITNESS: I have familiarity with BAK cages being inserted from a lateral approach. I am not familiar specifically cf a length of 40 millimeters or longer, no.

BY MS. WICKRAMASEKERA:

**Q. Were you -- you were at NuVasive during the time that NuVasive was involved in the lawsuit with Medtronic; is that correct?**

A. I was, yes.

**Q. Okay. Do you recall the trial in that case? Do you recall a trial occurring in that case?**

A. I do recall a trial occurring, yes.

**Q. Okay. Do you recall NuVasive presenting testimony from Dr. Paul McAfee that surgeons had been routinely inserting non-bone implants from a lateral approach since the mid '90s? Do you recall that testimony?**

MR. ROSATO: Objection to form, foundation and scope.

THE WITNESS: Yeah, sorry.

I was not involved in the trial at that stage, and so I don't have specific knowledge of Dr. McAfee's testimony, no.

BY MS. WICKRAMASEKERA:

**Q. So you didn't -- you didn't consider the testimony presented by Dr. -- presented by NuVasive, from Dr. McAfee, in preparing your declaration; is that correct?**

A. I did not review that testimony, no.

**Q. Do you recall NuVasive presenting evidence of**

**publications from 19 -- from the late 1990s regarding the use of the BAK long cage in the lateral approach?**

MR. ROSATO: Objection. Form, foundation, scope.

THE WITNESS: Again, I wasn't involved in the trial or proceedings at that time, so no, I'm not familiar with that.

BY MS. WICKRAMASEKERA:

**Q. Okay. So you didn't consider that evidence, in preparing your declaration; is that correct?**

A. I did not, nc.

**Q. Okay. Do you know who Dr. Regan is?**

A. I do not know him personally, but I am familiar with who he is, yes.

**Q. Okay. Are you familiar with the publications of -- from Dr. Reagan during the late '90s about inserting the long BAK cage in a lateral approach?**

A. I have --

MR. ROSATO: Objection to form.

THE WITNESS: I have general knowledge of his publications on lateral surgery. And my recollection is that they didn't involve BAK or other cylindrical cages. I don't recall the specific dimensions of those devices, no.

BY MS. WICKRAMASEKERA:

**Q. Okay. If you know who Dr. Michaelson is?**

A. I am familiar with Dr. Michaelson.

**Q. Are you familiar with Dr. Michaelson's patents from 1995 that describe lateral implants that span the full transverse in the vertebral body?**

MR. ROSATO: Objection to form, foundation and scope.

THE WITNESS: I do not have firsthand knowledge of those, no.

BY MS. WICKRAMASEKERA:

**Q. Okay. Are you aware that NuVasive was found to infringe those patents from Dr. Michaelson regarding his translateral spinal implant?**

MR. ROSATO: Same objection.

THE WITNESS: So it was my understanding that they were and that there were some elements of that that are appealed. And, again, my area of expertise is not specific claims associated with patents. So I can't tell I can speak to that. Dr. Youssef would probably be better versed.

BY MS. WICKRAMASEKERA:

**Q. So you're not aware that the Federal Circuit affirmed the jury's verdict that NuVasive's CoRoent XL implant infringes Dr. Michaelson's translateral spinal implant patent, correct?**

MR. ROSATO: Objection to form, foundation and scope.

THE WITNESS: Again, I know that there are a number of claims associated with these patents. I'm not an expert in the individual claims and...

BY MS. WICKRAMASEKERA:

**Q. So you didn't consider Dr. Michaelson's 1995 translateral spinal implant patent, in preparing your declaration, correct?**

MR. ROSATO: Objection. Form, scope, asked and answered.

THE WITNESS: I did not.

BY MS. WICKRAMASEKERA:

**Q. Okay. Were you aware that NuVasive presented testimony, under penalty of perjury, from Dr. Brantigan in the jury trial against Medtronic?**

A. As stated earlier, I wasn't directly involved with those proceedings, but I did have some general awareness that Dr. Brantigan testified in some capacity.

**Q. Okay. And were you aware that Dr. Brantigan testified about his use of -- his anterior cages that were made by AcroMed that were long and that he inserted using the lateral approach?**

MR. ROSATO: Objection. Form, foundation, scope. I'm going to note, you are introducing

representations of evidence that's not in record.

MS. WICKRAMASEKERA: That's fine.

MR. ROSATO: And I don't like where you are going with this.

MS. WICKRAMASEKERA: That's fine. He can tell me whether he is aware of it or not.

THE WITNESS: I'm sorry. Can you restate the question?

BY MS. WICKRAMASEKERA:

**Q. Sure. Are you -- okay. Actually, did you -- let me just ask this simpler, okay?**

**Did you consider the testimony presented by NuVasive from Dr. Brantigan, under penalty of perjury, in the jury trial against Medtronic, in preparing your declaration?**

A. I did not consider the testimony of Dr. Brantigan, no.

**Q. Okay. But you were aware there was testimony from Dr. Brantigan?**

A. Again, as I stated --

MR. ROSATO: Objection. Asked and answered, scope.

THE WITNESS: As I stated previously, I was not aware -- I was not party to the proceedings. I was not aware of the specifics associated with that

testimony, no.

BY MS. WICKRAMASEKERA:

**Q. Okay. So when you refer in your declaration to the length of the CoRoent implant being novel --**

A. I'm sorry. Could you --

**Q. Actually, you know what? Let me ask you that, as a foundational question.**

**Do you believe that the length of the CoRoent XL -- do you believe the length of the CoRoent XL implant is novel?**

MR. ROSATO: Objection. Form, foundation and scope.

THE WITNESS: I believe, at least, again, based on my experience having competed against NuVasive in the marketplace when they introduced the CoRoent XL implant and then having represented it, marketed it, sold it, having the optionality of lengths, you know, greater than 40 millimeters -- or 40 millimeters and greater, I believe to be novel, based on my experience at the time.

BY MS. WICKRAMASEKERA:

**Q. Okay. So that in -- and is that belief reflected in your declarations?**

A. I don't recall if that is cited specifically. I believe my reference to -- there is a reference to

size which would include -- in my mind, would have been inclusive of the overall dimensions.

**Q. Now, you refer in paragraph 15 to testimony from Mr. Miles, "that the CoRoent XL implants were the first commercially available lumbar interbody implants having a length greater than 40 millimeters." Do you see that?**

A. I'm sorry?

**Q. It is in paragraph 15. Did I refer to it wrong?**

A. Yes, I see it in paragraph 15.

**Q. Yes.**

A. "Mr. Miles further testified," yes.

**Q. So Mr. -- you state that, "Mr. Miles further testified that the CoRoent XL implants were the first commercially available lumbar implants having a length greater than 40 millimeters." Do you see that?**

A. I don't believe that's exactly what that statement says.

**Q. You go on to state further things about the width and the other -- and other aspects --**

A. I don't -- I didn't actually state this. Mr. Miles stated this.

**Q. Right. I think I said that you stated that Mr. Miles did, but if I didn't, let me ask the question**

**again. Okay?**

**In paragraph 15, you state that, "Mr. Miles further testified that the CoRoent XL implants were the first commercially available lumbar interbody implants having a length greater than 40 millimeters."**

**Do you see that?**

A. Yes, but it also says, "Implants having a length greater than 40 millimeters, a maximum width of 18 and designed for insertion," a direct lateral transpsoas approach to the lumbar spine." I don't -- I don't believe that those -- at least my interpretation of those comments from Mr. Miles were not that each of those is mutually exclusive, but that they are interrelated.

**Q. Right. That's fair.**

**So let me ask you first about the length greater than 40 millimeters. Do you agree with Mr. Miles' statement that CoRoent XL implants were the first commercial available lumbar interbody implants having a length greater than 40 millimeters?**

A. Again, I think you are mischaracterizing the statement. I don't believe -- at least my interpretation of this is not that he was saying it was greater -- independently greater than 40 millimeters. He is saying that it was greater than 40 millimeters,

inclusive of a maximum width of 18 millimeters, and designed for lateral. That was my interpretation of this statement.

**Q. Okay. That's fair.**

**So what I want to ask you, though, is I want to specifically ask the 40-millimeter-length portion of the implant and take each one in turn. I understand that you are talking --**

A. I don't believe that's an accurate reflection of the statement, though.

**Q. Okay. Well, let me just ask you this. Do you believe that NuVasive was the first to have a 40 millimeter lumbar implant?**

MR. ROSATO: Objection to form, foundation, asked and answered.

THE WITNESS: I do not know that NuVasive was the first to have a 40 millimeter implant.

BY MS. WICKRAMASEKERA:

**Q. Okay. Do you believe that NuVasive was the first to have an implant that measured 18 millimeters in the anterior-posterior direction?**

MR. ROSATO: Objection. Form, foundation, scope.

THE WITNESS: I do not know that NuVasive was the first to have a implant that measured 18

millimeters. And per the statement, I think the interpretation of importance was a combination of the length and the width of the implant.

BY MS. WICKRAMASEKERA:

**Q. Okay. So you don't have any opinion as to whether NuVasive was the first to have an implant that measured 18 millimeters in the anterior to posterior dimension?**

MR. ROSATO: Objection. Scope.

THE WITNESS: I think my previous answer is the same, which is, I don't know that to be true or not.

BY MS. WICKRAMASEKERA:

**Q. Okay. Do you believe that NuVasive was the first to design an implant for a direct lateral approach?**

MR. ROSATO: Objection to form, foundation and scope.

THE WITNESS: I don't know that to be true or not.

BY MS. WICKRAMASEKERA:

**Q. Do you believe that NuVasive was the first to design an implant for insertion using the transpsoas approach?**

MR. ROSATO: Same objection.

THE WITNESS: I don't know that to be true or

not.

BY MS. WICKRAMASEKERA:

**Q. And so just to round this out on the skepticism. The skepticism that you are referring to in your declaration regarding the CoRoent XL implant is specifically skepticism of the width and the length of the implant; is that correct?**

MR. ROSATO: Objection. Form, asked and answered.

THE WITNESS: Yeah, so my understanding, consistent with Ms. Howell's statement as well as my own experience, was that there was a skepticism over the overall size of the implant; width being one consideration; the availability of length, in particular, the length in excess of 40 millimeters, that allowed positioning of the implant to bridge the apophyseal ring and optimize the stability.

I'm unaware cf other implants, as Mr. Miles said, that offered all of those features or benefits through geometry being length of 40 millimeter and greater, along with a width of 18 millimeters specifically designed to be facilitated through a lateral approach.

And so I agree with Mr. Miles' statements that the combination of those features were unique, based on

my experience.

BY MS. WICKRAMASEKERA:

**Q. I notice in your excerpts of Ms. Howell's testimony, paragraph 14, you cut off her answer. Do you know why you did that?**

MR. ROSATO: Objection to form.

THE WITNESS: I do not recall at the time. My recollection was in my discussion around experience around skepticism related to the size and geometry of the implant, that Ms. Howell's statements were consistent with what I have heard her and others characterize previously as well as my own experience.

BY MS. WICKRAMASEKERA:

**Q. And how -- how did -- what did Ms. Howell testify -- or how did Ms. -- withdrawn.**

**Did Ms. Howell testify as to how NuVasive overcame that skepticism?**

A. I do not recall the specifics of her testimony. I can speak from my own experience, how I believe that was addressed in the market.

**Q. How do you believe that was addressed in the market?**

A. Well, in paragraph 12, I state specifically, "NuVasive undertook considerable efforts to overcome the skepticism expressed by industry professionals,

including establishing a cadaver lab in San Diego, California headquarters as an XLIF training center," that being one component of it.

**Q. How did that specifically address skepticism regarding the length and the width of the implant?**

MR. ROSATO: Objection to form.

THE WITNESS: So in my experience, it provided a forum for surgeons tc appreciate the anatomic, you know, geometry of the spine and the ability to -- and surrounding that, I mean, the ability to safely deliver the implant.

So I believe that training component was important, and that -- an important part of the education process.

BY MS. WICKRAMASEKERA:

**Q. Was there any skepticism expressed regarding the location of the markers in the implant?**

MR. ROSATO: Objection to form, foundation.

THE WITNESS: I don't recall there -- I don't recall, in my own experience, that being a primary point of skepticism, no.

BY MS. WICKRAMASEKERA:

**Q. Do you recall any skepticism about whether placing the markers in the middle of the implant would assist a surgeon with aligning the implant during**

**insertion?**

MR. ROSATO: Objection to form, foundation, scope.

THE WITNESS: I don't recall any skepticism with the markers -- yeah -- placement of the markers are -- the role they played in visualization of the implant.

BY MS. WICKRAMASEKERA:

**Q. How did NuVasive know that you could place the markers in the middle of the implant and that would be useful to a surgeon?**

MR. ROSATO: Objection. Scope, form.

THE WITNESS: So, again, just based on my own experience and recollection of, you know, what I understood it, it was just through clinical evaluation of the implant.

BY MS. WICKRAMASEKERA:

**Q. Before the implant was made or after?**

A. Again, at least to my understanding. I did not have direct involvement in the development of the implant, but through the development of the implant utilization, I think as I stated in my declaration, in addition to utilizing the cadaver lab as a training facility, it was also a testing facility, not just for XLIF, but other procedures.

So it was my understanding, just based on my

experience, that they evaluated different options to facilitate the -- how best to visualize the orientation of the implant in the space. I think, given the size and geometry of the implant, accurate visualization of its placement in the disc space was deemed as important. I certainly heard that type of feedback from surgeons.

And, at least, again, just based on my experience, there is implants that have different marker types and different marker orientations that, I've heard, suggested are more difficult to understand the orientation of the implant in the disc space.

**Q. Are those implants that have different marker types and different orientations, that you just testified were more difficult to understand, were those prior our implants?**

MR. ROSATO: Objection to form.

THE WITNESS: I don't know.

BY MS. WICKRAMASEKERA:

**Q. Okay.**

A. I'm speaking from my clinical experience.

**Q. Your clinical experience being -- starting from what time -- time period?**

A. I started in the spine industry in 2004.

**Q. Okay. Do you recall any skepticism about having a fusion aperture passing through the implant,**

**from the top to bottom?**

A. I don't recall a skepticism specific to the fusion aperture.

**Q. Do you recall any skepticism regarding the number of radiopaque markers to put in the implant?**

A. I do not recall skepticism specific to the number of markers.

**Q. Do you believe that NuVasive was the first to conceive of the idea of including radiopaque markers in a PEEK implant?**

MR. ROSATO: Objection to form, foundation and scope.

THE WITNESS: My experience, prior to NuVasive, was that other implants had radiopaque markers in them.

BY MS. WICKRAMASEKERA:

**Q. Okay. And the 18-millimeter width that you've referred to for the CoRoent XL implant, what were the -- what were the primary anatomical considerations in arriving at the 18-millimeter width?**

MR. ROSATO: Objection to form and foundation.

THE WITNESS: At least, again, I was not at NuVasive at the time the implant was developed. My understanding at the time that I arrived at NuVasive was that the desire was to make the implant as wide as

possible.

And, again, as -- when I started with the company in 2006, as I understood at that time, the limitation to making the implant wider was the initial skepticism and feedback from the clinical community, that the 18-millimeter-wide implant could be a challenge clinically to place. And so...

BY MS. WICKRAMASEKERA:

**Q. So when you say it "could be a challenge clinically to place," do you mean -- do you mean its placement safely on the vertebral body or in the intervertebral space itself or do you mean the path of insertion?**

A. Both are considerations.

**Q. Okay. And let's take the first one, in terms of the -- where it sits in the intervertebral space.**

A. Yes.

**Q. What are the -- what are the considerations there?**

A. Primary considerations would be a -- if the implant was placed, I think at least in my experience, the primary concern was that the implant was placed too far anterior. It could, upon placement, violate and involuntary release the ligament that sits across the front of the spine, which is an important factor in

stabilization, but also protects the vascular structures that reside in the anterior part of the lumbar spine.

**Q. Do you know what the common anterior-posterior dimension was of the implants that were inserted -- that were commercially available prior to the CoRoent XL?**

MR. ROSATO: Objection to form, foundation.

THE WITNESS: From what approach?

BY MS. WICKRAMASEKERA:

**Q. From any approach.**

A. Okay.

**Q. And I'm talking about -- the reason why I said anterior-posterior dimension, is I mean approach.**

A. Okay.

**Q. Anterior-posterior dimensions. Are you familiar with what is commercially available?**

A. So --

MR. ROSATO: Same objection.

THE WITNESS: -- from a posterior approach, in my experience, an average width was probably somewhere between 9 and 11 millimeters.

BY MS. WICKRAMASEKERA:

**Q. But you're not talking -- in a posterior approach, when you are referring to the width, that's not the anterior-posterior dimension, is it?**

A. If you place it correctly, it is, yes. So if

you do -- if you do an anterior TLIF procedure, which is a banana-shaped cage to the front of the spine.

**Q. All right.**

A. Which will sit in a similar orientation to an ALIF or an XLIF, that is -- that is the correct orientation in width.

**Q. Okay. So if you are doing a PLIF, a bilateral PLIF, you are familiar with the bilateral PLIF --**

(Reporter asks for clarification.)

BY MS. WICKRAMASEKERA:

**Q. If you are doing the commercially-available cages that were used for a bilateral PLIF at the time --**

A. Right.

**Q. -- before CoRoent XL, what was the typical anterior to posterior dimension of those implants?**

MR. ROSATO: Objection to form, foundation and scope.

THE WITNESS: Yeah, so depending on the offering, there was a -- there is a wide range of offerings. I can't tell you, yeah, conclusively, what the range or average would be. Based on my experience, I'd say the average length is probably in the neighborhood of 25 millimeters.

Again, what you're -- you're comingling, you know, the clinical requirements based on the approach,

because while you had a -- you are talking about an implant that is placed in a different orientation. You are talking about an implant that's contained entirely within the disc space, not designed to bridge across the apophyseal ring.

And so I think you are trying to make a comparison to dimensions that are unrelated to one another. So if you wanted to make a more accurate comparison --

BY MS. WICKRAMASEKERA:

**Q. Yeah.**

A. -- you could compare it to an ALIF.

MR. ROSATO: Let him finish.

BY MS. WICKRAMASEKERA:

**Q. Okay.**

A. You can compare it to an ALIF.

**Q. Okay.**

A. And similarly, while you have a wider implant front to back, anterior to posterior, than 18 millimeters, you have a narrower implant laterally, typically, than the CoRoent XL. And, again, the -- independent of how they are used, because surgeons can ultimately use an implant at their discretion, an ALIF implant is designed to be contained within the disc space.

And an XLIF -- or CoRoent XL implant is designed to bridge acrcss the interbody space. And so when you think about the anterior-posterior dimension relative to the width, you have a vertebral body that is not of uniform width.

**Q. Right.**

A. And so you are talking about very different anatomic considerations as you comingle approaches in the dimension of an implant of one approach versus the other.

**Q. Now, the CoRoent XL implant doesn't actually sit on the apophyseal ring on the anterior portion of the vertebrae, does it?**

A. I'm sorry?

**Q. The CoRoent XL implant does not actually sit on the apophyseal ring on the anterior portion of the vertebral body, correct?**

A. Again, so in my experience and how we -- how NuVasive promoted the technique, oftentimes, if not, I'd say most oftentimes, included a discussion around placing an implant that bridged the apophyseal ring.

**Q. Now, when you say "bridged the apophyseal ring," you're referring to the portions of the apophyseal ring on the lateral aspects of the vertebral body; am I correct?**

A. That is correct.

**Q. Okay. So you are not you are referring to the portions of the apophyseal ring that are on the anterior and posterior portions of the vertebral body, correct?**

A. That would be -- in my experience, that would be typically correct, yes.

**Q. Okay. And so you believe that NuVasive was the first to conceive of the concept of sizing an implant to bridge the apophyseal ring; is that correct?**

MR. ROSATO: Objection. Form, foundation and scope.

THE WITNESS: I did not say that. And I don't know that to be true or not.

BY MS. WICKRAMASEKERA:

**Q. When the CoRoent XL implant is inserted, is the -- is the -- actually, withdrawn, because I can't remember the name of that portion of the anatomy.**

**What is it called, the contralateral -- the part of the disc that remains on the contralateral side when you do a lateral procedure? Do you recall what that's called? Do you know what I'm talking about?**

A. I'm not trying to be difficult.

**Q. Yeah.**

A. In my experience, if you are doing a lateral interbody preparation correctly, there should not be

disc or annulus intact on the contralateral side.

**Q. There should not be? Don't you release it but don't remove it?**

A. I mean --

MR. ROSATO: Objection to form, foundation scope.

BY MS. WICKRAMASEKERA:

**Q. Do you know?**

A. No, I know.

**Q. Yeah.**

A. If you -- if you -- again, in my experience --

**Q. Right.**

A. -- the technique that we taught and promoted --

**Q. Yeah.**

A. -- to our surgeons and including the certifications we provide in -- on the procedure, our sales force, is that ycu would comprehensively evacuate the disc across the disc space and that you would completely disrupt the annulus on the contralateral side.

**Q. Okay. So there is no portion of the anulus on the contralateral side that would remain intact?**

MR. ROSATO: Objection. Form, foundation, scope.

THE WITNESS: Again, it would depend on the surgeon's technique and how -- how aggressively they release the annulus.

BY MS. WICKRAMASEKERA:

**Q. Okay.**

A. The -- as I understand how we have most consistently taught the technique would be a release of the contralateral annulus, you know, consistent to the width of the implant, ideally.

**Q. Right. But a release and a removal of the contralateral annulus are two different things, correct?**

MR. ROSATO: Same objection.

THE WITNESS: It could be, I suppose, yes.

BY MS. WICKRAMASEKERA:

**Q. Okay. And if you release but don't remove the contralateral annulus, it is still attached to the apophyseal ring, correct?**

A. Again, I'm nct sure if that's an accurate characterization or not.

**Q. Do you have any reason to believe it is not accurate?**

MR. ROSATO: Objection. Asked and answered.

THE WITNESS: Yeah, I'm not sure I'm actually clear on what you are asking.

BY MS. WICKRAMASEKERA:

**Q. If you release but don't remove the contralateral annulus, what is the contralateral annulus connected to on the vertebral body?**

MR. ROSATO: Objection. Form, scope, asked and answered.

THE WITNESS: In theory, it would be attached to the vertebral end plate.

BY MS. WICKRAMASEKERA:

**Q. At what point?**

A. On or about the -- yeah, the edge of the vertebral body, which would be an approximation to the apophyseal ring. Whether or not the implant sits in direct contact with the apophyseal ring, if there happens to be some element of annular tissue that's remnant, in my experience based on my knowledge, I don't believe implants the biomechanic stability of the -- of the implant.

**Q. In paragraph 20 of your declaration, you provide a side-by-side comparison of a CoRoent XL and the Alphatec Battalion implants. Do you see that?**

A. I do see that, yes.

**Q. And you refer to the side-by-side comparison as showing "the striking similarities between NuVasive's CoRoent XL and Alphatec's Battalion implants." Do you see that?**

A. I do see that, yes.

**Q. In preparing your declaration, did you consider the Court's -- in the District Court, the Court's dismissal of NuVasive's claims that Alphatec's Battalion lateral implant was similar in design to the CoRoent XL?**

MR. ROSATO: Objection. Form, foundation and scope. And we are also introducing inaccurate characterizations of evidence that's not in record.

THE WITNESS: I did not consider that, no.

BY MS. WICKRAMASEKERA:

**Q. Okay. If the Court in the District Court litigation concluded that Alphatec's Battalion lateral implant had obvious differences between the CoRoent XL implant and -- with the CoRoent XL implant, would you disagree?**

MR. ROSATO: Same objection.

THE WITNESS: Again, I'm not an attorney. I don't have the ability, I think, to form an opinion off of some legal judgment or ruling.

BY MS. WICKRAMASEKERA:

**Q. If the Court in the District Court litigation had concluded that the design of the CoRoent XL implant and the Battalion lateral implant were plainly dissimilar, would you disagree?**

MR. ROSATO: Same objection.

THE WITNESS: Again, I'm not an attorney and I'm not sure I'm qualified to make a decision on that basis.

BY MS. WICKRAMASEKERA:

**Q. No one provided you a copy of the Court's order dismissing NuVasive's design-pattern claims, in preparing your declaration?**

MR. ROSATO: Same objection.

THE WITNESS: I did not review that, no.

BY MS. WICKRAMASEKERA:

**Q. Do you recall NuVasive making public statements to investors, following the jury verdict, that it infringed the Medtronic implant patent?**

MR. ROSATO: Objection. Form, foundation, scope.

THE WITNESS: I have a general recollection of statements. I don't recall the exact form, whether it be press release or otherwise. I don't recall the specifics now. Several -- many years ago.

BY MS. WICKRAMASEKERA:

**Q. In 2012, did you have any involvement with CoRoent?**

A. In 2012, I was in a sales leadership role of -- in -- in that capacity, was responsible for the sales

and promotion of CoRoent implants, yes.

**Q. What design-arounds were considered by NuVasive for the CoRoent XL implants to address the jury's verdict in the -- in the Medtronic case?**

MR. ROSATO: Objection. Form, foundation, scope. I'll caution we be careful about privileged information.

THE WITNESS: I don't recall having any firsthand knowledge related to the specifics of the technical design of the implant at that time.

BY MS. WICKRAMASEKERA:

**Q. Do you know which patents NuVasive was found to infringe in the Medtronic case?**

A. I do not know, off the top of my head.

MR. ROSATO: Objection. Form, foundation, scope.

BY MS. WICKRAMASEKERA:

**Q. You didn't review the Federal Circuit's decision regarding the jury verdict of infringement in the Medtronic case, in preparing your declaration?**

MR. ROSATO: Objection. Form, foundation and scope.

THE WITNESS: I did not. Like I said, I am not an attorney as it relates to legally interpret these claims and implications.

BY MS. WICKRAMASEKERA:

**Q. Aside from Dr. Youssef, are you aware of anyone else stating that Alphatec copied the design of the NuVasive CoRoent XL implant?**

A. As indicated in the declaration, it was the expert opinion of Dr. Youssef that I relied upon, with respect to the claims on the -- as it reflected in the patents, and the similarity.

**Q. Okay. I'm -- I think I'm speaking more generally regarding your opinion as expressed in paragraph 20, that the CoRoent XL and Alphatec Battalion lateral -- Battalion implants are strikingly similar. With respect to that opinion, are you aware of anyone, other than Dr. Youssef, expressing to you that opinion?**

A. Yeah, so as I read paragraph 20 and recall as best I can, the declaration, I believe that's reflective of my opinion that per the exhibits or images that are provided in the declaration, in my opinion, they look similar or nearly identical.

**Q. Okay. Has anyone else expressed to you -- other than Dr. Youssef, has anyone else expressed to you that the implants, the two implants, are strikingly similar?**

A. I haven't actively sought that input.

**Q. No one said it to you anyway, despite your not**

**actively seeking it?**

MR. ROSATO: Objection. Asked and answered.

THE WITNESS: I haven't actively sought that input, no.

MS. WICKRAMASEKERA: We could probably take a break now.

MR. ROSATO: Okay.

(Recess.)

BY MS. WICKRAMASEKERA:

**Q. Mr. Link, could you turn to paragraph 13 of your report.**

A. Yes.

**Q. Let me know once you are there.**

A. I'm on paragraph 13.

**Q. Okay. Do you see the second sentence of paragraph 13? It starts with "only"?**

A. Yes.

**Q. Okay. So in paragraph 13, you state, "Only a handful of highly-skilled surgeons had even attempted a minimally-invasive lateral approach for degenerative disc spinal fusion surgery, with mixed results at best." Do you see that?**

A. I do see that, yes.

**Q. Which surgeons are you referring to?**

A. So, again, based on my understanding during my

tenure in the company, one surgeon in particular was Dr. Luiz Pimenta, who had a technique, as I understood it, for lateral approaches that was different than the, you know, XLIF procedure and different forms of technology.

I think if ycu -- and I guess, again, in my experience, other surgeons who had done lateral approaches happen to be familiar with Dr. McAfee. You could even argue whether or not it was even considered minimally invasive, depending on how subjectively you categorize that. But those would be two examples of others I had been familiar with prior to my -- my personal experience with XLIF.

**Q. Okay. Are there any other surgeons that you are referring to here?**

A. I don't recall what other surgeons may have -- I may have considered at that time.

**Q. Okay. How do you measure reproducibility?**

A. So I think one of the major measures, at least in my opinion, in my experience of reproducibility is whether or not a procedure could be successfully and broadly adopted. I think that's indicative of reproducibility.

In my experience, surgeons tend not to adopt techniques or technologies that don't facilitate good outcomes. So if it is reproducible, i.e., in the

ability to achieve a good outcome. I think reproducibility is reflected through the broad clinical and commercial adoption of a technique or technology.

There is other, I think, more objective measures which can be, you know, operative time, associated with -- or variability in operative time between clinicians, things like that. But, certainly, I think the adoption within the marketplace is a solid reflection.

**Q. How many surgeons need to adopt it for it to be considered reproducible?**

A. I don't have a set definition of what that would be.

**Q. Does the number of surgeons who adopt it depend, in part, on a company's efforts with surgeon training?**

A. I believe --

MR. ROSATO: Objection to form and foundation.

THE WITNESS: Again, in my experience, a surgeon's ability to adopt is related to, I think, the merits and the validity of the technology, overcoming skepticism over their belief in that, safety and reproducibility, certainly, can be supported through training and education.

BY MS. WICKRAMASEKERA:

**Q. Have you -- okay.**

**Is there an objective way to measure safety?**

A. Yes, I believe there is.

**Q. And what is that measure, objective measure?**

A. Again, based on my experience in the industry, typically, safety would be reflected through complications measured or associated with a surgical procedure.

**Q. Okay. So for lateral procedures, what complication rates would be considered the threshold for safety versus -- safe versus non-safe?**

A. I think the primary consideration would be how those complication rates compare to other procedures or interventions intended to address the same pathology or anatomic disease.

**Q. So is there a single objective measure to determine whether a lateral approach is safe or not safe?**

A. I am not aware of one single measure. I am aware of several hundred published studies or examples of clinical evidence related to XLIF that show a clinical profile as safe, or more safe, than other surgical techniques that have commonly been used to address spinal pathology.

**Q. As safe as ALIF?**

A. I believe that the body of clinical evidence around XLIF demonstrates a safety profile as good as ALIF, yes, in my opinion and my experience.

**Q. Is there an objective measure to determine whether a lateral approach is reproducible or not reproducible?**

A. I'm not aware of a single objective measure. I would say that my characterization of it as safe and reproducible, again, is a reflection of the broad adoption that we have seen of the technique in the marketplace, including within academic training centers. It is also how I've heard XLIF categorized by clinicians as well as other executives who have been either at NuVasive or previously at NuVasive, like Ms. Miles and Ms. Howell.

**Q. Is the phrase "safe and reproducible" a marketing phrase?**

A. In my experience, it is a reflection of how I have categorized in my own experience and promotion of the procedure, but I think also a reflection of how the company has assessed the procedure, but also how the market has received the procedure, based on a safety profile and the ability to successfully adopt into a physician's practice, or surgeon's practice, in a manner similar to other spinal surgery techniques.

**Q. Are you aware of who within NuVasive came up with the term "safe and reproducible"?**

MR. ROSATO: Objection. Form, foundation.

THE WITNESS: I'm not aware of that phrase being attributed to one single individual.

BY MS. WICKRAMASEKERA:

**Q. Okay. But NuVasive did come up with the term "safe and reproducible"?**

A. I can't say conclusively that NuVasive coined the phrase "safe and reproducible," and that it's never been used in conjunction with any other surgical technology, let alone spine technology, no.

**Q. Is that a phrase, "safe and reproducible," is that a phrase you generally associate specifically with NuVasive?**

A. It is a phrase that I have used, yes, in my time at NuVasive. Yes.

**Q. Is it contained in a lot of the marketing materials for NuVasive?**

A. I mean, "a lot" is a subjective word, but I am familiar with it being utilized in a number of different marketing materials, yes.

**Q. Now, in the middle of your paragraph 13, you state, "These earlier lateral approaches were not considered safe or reproducible." And then you go on to**

**state a few other things in that sentence.**

**But I'd like to ask you about your statement that the lateral approaches -- the "earlier lateral approaches were not considered safe or reproducible." Who specifically did not consider those earlier lateral approaches to be safe or reproducible?**

A. Yeah, so as I stated in my -- in a previous response, I think at least in my view, a measure of the market's perception or acceptance of a -- of safety and reproducibility is reflected through the market's adoption. And in my experience, I did not see other lateral approaches being widely adopted.

**Q. Are there any other factors that would lead to a competitor company not developing a lateral approach, aside from safety and reproducibility?**

MR. ROSATO: Objection to form and foundation.

THE WITNESS: I suppose there could be. I have not been party to those discussions at other companies.

BY MS. WICKRAMASEKERA:

**Q. Would, for example, cannibalism of your own alternative product lines potentially be a reason why others may not have developed commercial lateral products before NuVasive?**

MR. ROSATO: Objection. Form, foundation,

scope.

THE WITNESS: Again, I'm not at those other companies, so I can't speak to what their rationale in those decisions were.

BY MS. WICKRAMASEKERA:

**Q. So there may be other reasons why others have not commercially launched a lateral interbody fusion technique before NuVasive that have nothing to do with lack of safety and reproducibility; is that correct?**

MR. ROSATO: Objection. Form, foundation.

THE WITNESS: Again, I wasn't at those companies, wasn't party to those discussions. I can only speak to my experience at NuVasive, where, in addition to XLIF, we have developed a full line of complimentary procedures. So that's the only experience I can speak to.

BY MS. WICKRAMASEKERA:

**Q. So you have no opinion, one way or the other, as to whether there might be other factors other than safety and reproducibility that might have prevented other competitors from launching a lateral product portfolio before NuVasive; is that correct?**

A. What I'm saying is, I can't speak factually as to what their rationale was for whether they made that decision or not.

**Q. Now, NuVasive has an ALIF product line, correct?**

A. We do, yes.

**Q. And is that safe and reproducible?**

A. In my experience, there is a known complication profile for every procedural type and there is one associated with ALIF. Yes, there is. But it has, I think, a complication profile that at this point seems to have been accepted by the market.

**Q. Are you uncomfortable saying that your NuVasive's ALIF product line is safe and reproducible?**

MR. ROSATO: Objection. Form, foundation.

THE WITNESS: I'm just trying to understand the question as accurately as possible. You asked me previously how I've categorized something as safe and reproducible and if there was a objective measure. So as accurately and as best I can, I'm answering that ALIF has a known complication profile, but based on its adoption in the market, it seems to have been accepted.

BY MS. WICKRAMASEKERA:

**Q. Is XLIF safe and reproducible?**

A. In my experience, I would say, based on its market acceptance, that it is.

**Q. Okay. Is TLIF safe and reproducible?**

MR. ROSATO: Objection to form, foundation.

THE WITNESS: Similar to my answer on ALIF, it has a known complicatcn profile. Based on that and the clinical experience associated with it, it appears to have been accepted by the market.

BY MS. WICKRAMASEKERA:

**Q. Okay. Is PLIF safe and reproducible?**

MR. ROSATO: Objection. Form, foundation.

THE WITNESS: Similar to my answer on ALIF and TLIF, PLIF has a known risk and complication profile well accepted by the market. It is an interbody technique that, I would say, seems to be declining in market adoption --

BY MS. WICKRAMASEKERA:

**Q. Does --**

A. -- based on my opinion and experience.

**Q. Does NuVasive have any PLIF products?**

A. We do, yes.

**Q. Okay. Are they still being sold today?**

A. Yes, we still have sales in those products.

**Q. Okay. So are PLIFs being performed in NuVasive products even today?**

A. To the best cf my knowledge, they are. Yes.

**Q. Okay. Do you believe that those procedures are safe and reproducible?**

MR. ROSATO: Objection. Form, foundation.

THE WITNESS: I believe that -- I believe the products that we offer for PLIF are safe, yes.

MS. WICKRAMASEKERA: I don't have anything further.

MR. ROSATO: Let's take a five-minute break.

(Recess.)

MR. ROSATO: Let's go back on the record. We have no further questicns. Thank you, Mr. Link.

MS. WICKRAMASEKERA: Thank you.

MR. ROSATO: Off.

(Recess.)

COURT REPORTER: Would you like to order a copy of the transcript and a rough draft?

MS. WICKRAMASEKERA: I will take the rough and then I guess, yeah, I will do the expedited since -- yes.

MR. ROSATO: I don't need anything.

(Deposition concluded at 11:26 a.m.)

REPORTER'S CERTIFICATE

I certify that the foregoing proceedings in the within-entitled cause were reported at the time and place therein named; that said proceedings were reported by me, a duly Certified Shorthand Reporter of the State of California, and were thereafter transcribed into typewriting.

I further certify that I am not of counsel or attorney for either or any of the parties to said cause of action, nor in any way interested in the outcome of the cause named in said cause of action.

IN WITNESS WHEREOF, I have hereunto set my hand this 13th day of January, 2020.

JOSHUA MANEA

Calif. CSR No. 13754

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I declare under penalty of perjury that I have read the foregoing _____ pages of my testimony, taken on _____ (date) at _____(city), _____(state), and that the same is a true record of the testimony given by me at the time and place herein above set forth, with the following exceptions:

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