Dr. Travis Decker:

Welcome to the Arthroscopy Association's Arthroscopy Journal podcast. Welcome everyone. I'm Dr. Travis Dekker coming from the United States Air Force Academy, and today I have the absolute privilege to talk to my dear friend Dr. Jorge Chahla, who truly needs no introduction. I truly believe that he is the star of our generation coming from Rush University Orthopedics. He's published more articles than there are hairs on my head and has served on the board of committee of every major sports organization. He's known for his exquisite anatomical dissections and precise research, along with his exuberant personality and eye catching presentations. He's a phenomenal mentor and teacher to many, to include myself.

He has so many orthopedic accolades that it would require the entire time allotted for this podcast to go through them all. What's unique about Jorge is his unassuming approach and his ability to connect orthopedists from different generations, different backgrounds, and even different specialties. I'm absolutely humbled to introduce my friend, mentor and colleague, Dr. Jorge Chahla.

Dr. Jorge Chahla:

Thank you so much, Travis, for having me in the podcast. It's a real honor to be here talking to you today. It's actually a fun experience to me, so let's get right to it.

Dr. Travis Decker:

Well, today I'll be focusing on an article within Arthroscopy published in August 2022 entitled, "Patients Follow Three Different Rates of Recovery Patterns After Anterior Cruciate Ligament Reconstruction Based on International Knee Documentation Committee Score." So let's get started. Jorge, you built quite the empire in the research team and have become a powerhouse in early publishing of your career. Can you give us some background on what led you to come up with this study and what you've found that has been inconsistent in the literature to lead us to your scientific question in regards to the recovery in our ACL patients?

Dr. Jorge Chahla:

That's a great question, Travis. I think that one of the things that lead us to study more things is questions that patients ask us. And sometimes, you go and look at this in the literature and you can't find the real answer. At least for ACL injuries and ACL reconstructions, we have a lot of literature in regards to techniques and outcomes, in regards to how well did they do at two years, sometimes risk for failure, when do they fail, in which age group, and what are the risk factors. But we really don't know exactly, for the patients that actually do well at two years, what's the recovery pattern.

We all have seen people that do really, really well and continue to do well, but there's some people that don't do well early on and sometimes they require either change in physical therapy, sometimes another dose pack, to get their range of motion back, and sometimes they're quite unhappy at the beginning because they're not what they expected. However, when you change some things, they do get better. There's other people that initially do really well, and sometimes everything seems to be according to plan, but after six months or one year, their performance declines as they go back to sports. So we really wanted to try to understand exactly what it means for the real person, for the real patient, what are the real options that they have in regards to their recovery.

And what can we tell them to counsel them, and if there would be any risk factors that we could identify to be able to counsel them appropriately and potentially say, "You may be okay, but there's high chances that you may not do as well just because you have this and this and this risk factor that will

prevent you from reaching an optimal outcome, or at least it's a risk that you may not reach it at some point".

Dr. Travis Decker:

Jorge, super interesting. I've enjoyed being a part of and just listening to your team go back and forth on how to appropriately identify these questions and how you always turn them back into how can I best help either optimize my practice or treat patients, and then ultimately optimize their outcomes. But can you discuss some of the factors that you've noticed, both personally in your practice and those that you've discovered in the literature, that have led patients to have these different types of outcomes after ACL reconstruction?

Dr. Jorge Chahla:

That's another great question, and that's something that we can continue to study for many years to come, and I think we'll never have a perfect answer. There's multiple things, and I think in both worlds. One is the motivation world, where patients are willing to get back and go to physical therapy and do the home exercises. And sometimes, we are baffled by the fact that some other people will not be motivated even with their own needs, and miss physical therapy sessions, not concentrating on the things that you tell them to do to regain range of motion and so forth. So you have a big component. And what I see as red flags is people that may not be as compliant or not motivated to get back. I try not to push surgery for those people because I'm going to be frustrated as their surgeon.

There's also some risk factors that we can identify pre-op and that we can modify, such as smoking, which has been shown in multiple studies to be an independent risk factor, BMI, sometimes if they have a previously failed surgery, and various alignment or a big TBL slope. Those are the things that we are more aware of right now because we know that we can counsel patients in regards to there might be a potential increased risk for you undergoing ACL reconstruction for a retear. There's other things that we can't change, and those are, for example, generalized laxity, sometimes females in the age group of 15 to 25, those are people that most likely will be at an increased risk.

But studies, for example, from Alan Denwood and [inaudible 00:05:52] in France have shown us that potentially adding an extra articular reconstruction in high risk patients may aid into a significant decrease of a failure rate. So I think we need to be cognizant about the literature because that allows us to make good decisions for patients and potentially counsel them when potentially the idea for surgery is not the best for them moving forward, just because they have too many risk factors and the risk for failure is high.

Dr. Travis Decker:

Oh, Jorge, it's interesting that you point all the factors out, and I think that your paper does a good job at addressing a little bit of a different side of this in terms of we have exhaustive literature on what leads to failure or things that put our work at risk in terms of optimizing the patient's functional ability to return. One thing I think that your paper hits on, and that you mentioned just there in your response was, we can never really truly account for the aspect of resilience and people's personal motivation to get back and to return to activity or to sport.

And so, I like your take on the paper to really look at their functional outcomes, not necessarily looking at the studies that have really hit home on risk of anatomic failure, but how about outcome failure? And so, the next question that I'd like you to explain is this is where, always on another level, man, and here's where many of us can get lost in the weeds of research and that make some of us, including myself, sometimes roll our eyes like, "Oh my gosh, how does this guy think of these things?"

And so, can you give us, as the surgeons that are out there hopefully trying to do our best, can you explain what latent class growth analyses or grit growth mixture models are, and why you chose to perform this type of analysis in this study? And in addition, why did you specifically choose the IKDC scores to help establish these subgroups to predict recovery patterns?

Dr. Jorge Chahla:

This is an interesting question because when you try to do research, you try to find the best way to get the answers that you're looking for, and sometimes what you have to do is surround yourself with smarter people than you are. And some of our research coordinators have been absolutely phenomenal in statistics and sometimes other skills that makes us better. One of them that I have to give a shout out to, Tom Alter, was one of our hip fellows and actually did this for hip arthroscopy and FAI. And we copied the same model to be able to understand this in ACLs. I think it's important sometimes to look at the literature in shoulder and hips because there's a lot of things that are being done outside the knee that can give us some insight as to other techniques that we can use to understand other knee related issues.

In regards to specifically the statistical method use in this study, all latent growth modeling approaches and growth mixture modeling have been increasingly been recognized for the usefulness for identifying homogeneous subpopulations within the larger heterogeneous population. In this case, in ACL reconstructions, we have tons and hundreds and hundreds of patients, but this system or approach allows us to identify subgroups of people that follow a very similar pattern. And this can be done for certain pathology or for a certain surgical outcome, like in this case.

I think this allows surgeons and patients to understand more easily what can happen after certain procedures. And I think it's pretty powerful because it allows you to give a pretty clear message as to whether, you know what, even though you may be okay at the end of the day or you may have a successful outcome, that the road may not be the same. And although you may get to the same outcome, you may do extremely well from the get go, but sometimes it's not the case, but you can counsel patients that you still have a possibility of catching up to the people that have been doing well from the get go. Why did we choose IKDC for this specific study?

It's because that's the legacy score that we had mostly for all patients and that patients filled out the most. So we wanted to make sure that we had the best capture rate that we could get from our patient population.

Dr. Travis Decker:

Understood, and it captures it, I think, exactly what you're trying to identify here and it leads into your paper and your methods. And I noticed that you chose a lot of clinical variables to look into and figure into your model. How and why were these chosen, and what, if any, impact did they have on the results of the development ultimately of this three class model that you all determined?

Dr. Jorge Chahla:

Well, we know that age, sex, BMI, narcotic use, duration from symptoms onset to surgery, pre-op rehabilitation, all those have been identified in the past as independent either risk factors or protected factors for good outcomes after ACL repairs or ACL reconstructions. And therefore, those were chosen because we wanted to see if those correlated with any of the classes that we previously identified in the subgroups.

Dr. Travis Decker:

Interesting. Okay. So you've used literature to kind of determine how those models are formed and then you've explained to us how these models are now practically being applied. So can you summarize your overall findings and the biggest take home points from your results, and just explain how that's impacted you in your practice?

Dr. Jorge Chahla:

Yeah, I think this one impacted my practice a lot because I can counsel patients better. We've basically found three classes. Class one, which we call early starters, represented the most favorable course of recovery after ACL reconstruction and comprised most patients, almost 77% of our patients. On the other hand, class two, which we called late starters, comprised the minority of the patients participating in the study and exhibited pretty much moderate favorable rate of recovery patterns, which were basically after six months or eight months of the surgery. The final class, which is class three, was 12.7%. And for those people, they showed slight improvement at one year follow up with a subsequent decline in IKDC between one and two years follow up. I use this information a little bit simpler in clinic, and I tell patients eight out of 10 people will do extremely well from the get go and from the start. There's 10% of the people which will potentially not do as well or kind of be slow at the beginning until six months or eight months, but they can catch up up to one year.

Now if this is a revision surgery, if you have a history of psychiatric illness, preoperative chronic knee pain or subsequent knee injury within the follow-up period, those were predictive of less favorable outcomes. So for those, I usually counsel them and say, "We just did this study where, when you had multiple of these risk factors, the chances of you having a less than optimal outcome are probably higher than the normal person." And I think in that way, when you are clear and upfront with your patients, they appreciate that, and potentially if the result is not as optimal as you would expect, the patients understand that. And sometimes if they're comfortable and feel able to do what they want to do, they will still be happy because you have explained all those things to them and they kind of understand what the potential outcomes are.

Dr. Travis Decker:

I think that's been a very awesome and astute way that you've been using that, and you discussed some of the variables that played in that and ended up turning out to be predictive of having worse outcomes and falling in that third class. Were you surprised about any of the variables that ended up not being associated with slower rates of recovery or with patients ending up into that third set or third class?

Dr. Jorge Chahla:

Yeah, Travis. We really thought that [inaudible 00:14:14] of cartilage injuries and meniscus injuries, like it has been shown in the past, would've been correlated with worse outcomes, at least cartilage disease, but they weren't. So a possible explanation that we thought about was the time frame. If you have cartilage disease, when you look at the outcomes at one or two years, they might not be completely different. However, if you probably wait for five or 10 to gather your outcomes, they might be different at that point.

So this is one of the limitations of the study, which is the follow up time frame is not long enough to detect potential long term risk factors such as meniscus or cartilage injuries. The same way that meniscus surgery outcomes, when you talk about meniscal repairs, a meniscal may do just as well as a repair at the first year or two years. A repair can be much more beneficial when you talk about long term outcomes. In the same way I think in this study, if you probably wait for a longer time, you may find a different outcome in regards to the risk factors that we are proposing here in this study.

Dr. Travis Decker:

Jorge, one thing that I think that the ability to counter your patients on natural trajectories that they might head and then allowing them to compensate one way or the other, as well as them feeling more comfortable with their rates of recovery, is obviously super important for pre-operative counseling. I was curious. Do you think that you can identify these patients that are in that class two and three categories, identify them early enough to either counsel them that they're falling into this pattern, or do you use it as an ability, almost like an early intervention, to where you can maybe change their trajectory or change them into one of the other classes based off of what you're finding their rate of recovery to be?

Dr. Jorge Chahla:

That's a great question, Travis, and I think that we all do this in clinic in one way or the other. We can identify people that are not as motivated. Sometimes, they will have lack of range of motion or limited range of motion early on, if there's smokers. There's things that we can change and there's things that we can't change. A 15 year old female, we can't change. But sometimes adding a secondary procedure can help. For people that have limited range of motion, we want to have them do rehab so that they can get the range of motion back. For people that we know are not as motivated, we may need to see more often. Two weeks, four weeks, six weeks, make sure that the extension is back, that they have full range of motion, that they're doing what they're supposed to do, completing the home exercise program.

All those things I think are extremely valuable, and the more that the pandemic has settled on us in potentially doing telemedicine visits, I see more and more surgeons do only telemedicines after surgery, which I think in my mind is not a great idea. Being able to see patients, examining them, can sometimes change the trajectory of how they do.

If you can prevent somebody to being stiff because you've identified that in clinic and potentially done something and given them a brace or an extensionator or a flexionator or a [inaudible 00:17:33], sometimes to regain range of motion or more aggressive physical therapy or whatever that might be, I think has a tremendous impact on the long term outcome. However, if you let that patient go for six months and then you see them back when the problem has settled, there's not too much that he can do. So what you just said, I think it's critical to all of us to learn, which is trying to identify risk factors, to be able to act upon them. And whenever we see a problem early on, those are things that most likely than not we can still correct, or at least try to make that patient be more engaged so that we can get to a really good outcome. However, if we let them go for too long, that might be a lost cause.

Dr. Travis Decker:

Well, Jorge, you are one busy man, and you got a great and booming practice, a beautiful family. You seem to be taking care of all of Chicago right now, which I'm sure they appreciate you for that. And so thanks for taking time out of your busy schedule. It's been a true pleasure having you on the podcast. I always personally appreciate your support of the military and your dedication to the education and teaching of our military surgeons. As we head out for the day, any final thoughts or words on where you and your team see research heading in terms of ACL reconstruction and how we can eventually make one of the most common procedures that much better?

Dr. Jorge Chahla:

Well, I think repairs are a big topic right now. Scaffolds for improved biologics and long term data I think are the three topics that I would say are the most important for ACL. I think at some point, repairs will become bigger as scaffolds continue to teach us how to prevent the contact from the synovial fluid to

the ACL, and hopefully we can get to a more stable scaffold where we can actually repair more and potentially preserve more of our own tissue.

That being said, as John Fagan has taught us 40 years ago, we need to wait for long term data. As he showed in his first two years after ACL repairs studies, those people, those cadets were doing extremely well. And I think West Point has been the leader in teaching us how to measure outcomes, because at five years, he actually showed that it was probably not the greatest thing. And great surgeons and great people like John Fagan have, by publishing a negative paper, taught us so much that it's incredible that his legacy lives in all of us and makes us understand that sometimes the first wave is always not the best wave, and sometimes we just need to sit down and wait until we see that the outcomes are reliable for our patients, that can be used in a regular manner. So I think those are the best topics that we should probably concentrate on to try to get better answers for this.

Dr. Travis Decker:

Well, Jorge, I look forward to hearing you on the podium meeting after meeting to see you blossom in your career, as you continue to teach us, I'm sure for the next 50 to 60 years, about knee, hip, shoulder surgery. It's incredible what you're taking on.

Dr. Jorge Chahla:

Travis, thank you so very much, brother. I truly appreciate you.

Dr. Travis Decker:

And specifically today, we discussed Arthroscopy article from Dr. Chahla, his team published in August of 2022, entitled, "Patients Follow Three Different Rates of Recovery Pattern After Anterior Cruciate Ligament Reconstruction based on International Need Documentation Committee score," and this can currently be accessed at www.arthroscopyjournal.org. Thank you all for joining us this evening and have a great day.

The views expressed in this podcast do not necessarily represent the views of the Arthroscopy Association or the Arthroscopy Journal and are not meant to be treatment recommendations for individual patient.

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