Dr. Justin Arner:

Welcome everyone. I'm Dr. Justin Arner from the University of Pittsburgh Medical Center in Pittsburgh, Pennsylvania. Today I have the pleasure of speaking with Dr. John Xerogeanes, Professor in the Department of Orthopedic Surgery at Emory University in Atlanta. Dr. X is a senior author of the paper titled "Localized Anterior Arthrofibrosis After ACL Soft-Tissue Quadriceps Tendon Autograft is More Common in Patients Who are Female, Have Meniscus Repair, and Have Graphs of Larger Diameter", which is in press in the Arthroscopy Journal. Welcome, Dr. X, and thanks so much for joining me.

Dr. John Xerogeanes:

Thanks for having me, Justin.

Dr. Justin Arner:

Yeah, this is great. Certainly we owe a lot of debt to you for pushing the quadriceps autograft envelope and giving us real data, because it's an exciting graft and really appreciate you bringing the science. So tell us a little bit of background about how you got interested in the quad, or the ACL.

Dr. John Xerogeanes:

Yeah, it's interesting. In 2011 I think it was, we were at the Panther Symposium, and Freddie sat me next to John Fulkerson. John was showing me his data on the quad tendon and we started talking and he said, "Yeah, it's a really nice graft." I asked him, "How do you do it?" John says, "Well, you just make an incision here and harvest it." Then I looked to the other side and Dr. Shelton was there from Mississippi and he's done a lot of quad tendons, just happened to be there. I said, "Well, how do you harvest it?" He said, "Well, I make an incision. I look at it and just cut it." I had a bunch of questions and they said, "Don't worry about it. It just works."

I got thinking about it and we went home and then we started with the basic science of it, everything from histology over to gross anatomy. Then we figured out a way that we can tell people how to harvest it, design the equipment to harvest it for fixation. Then we just started doing them. After about my first 50, I talked to Freddie and Freddie said, "Just do a whole bunch. Do a whole bunch. We've got to know." That was... I'm close to 2000 now. That's when we follow them, and that's where the genesis of... it wasn't my idea. A lot of people have done this in the past, but Christian Fink over at Europe who's a Pitt guy as well, we were at Pitt together doing fellowships, and he, unbeknownst to me, had started working on it in Europe, so we combined our data and techniques and this is where we are.

Dr. Justin Arner:

Yeah, that's awesome. The studies that you've put out with histology and graft length certainly make a lot of us, when we first start these, more comfortable that we know the length is just pretty reliable based on those early studies which are awesome. Has quadriceps become basically your graft of choice in most patients in 2023 at this point?

Dr. John Xerogeanes:

Yeah, I think it has. When I say most patients, my patients I worry most about are 14 to 22. Across the board that's where we have the highest re-injury rate, all of us around the world. The quad data, now that we just finished about 700 cases of people and we have 71 month average follow up, when we compared it to the MOON data, we're almost exactly the same as a patellar tendon. It sounds good, but we're still all about an average of a 10% failure, and that's not great. Once you get past 22, then all of

the autografts are good. Then once you get past 30, it doesn't matter what you use. Those people all do very well.

Now, interesting. I do a lot less allografts now than I used to, between 30 and 50. I used to do a fair amount of allografts but I really pick my people. If they're an aggressive athlete, then I'll use a quad on them and they do great, especially the males. They do great with that and have no problem whatsoever. I still use allografts for people that don't do much. They used to have an unstable knee and they fail conservative treatment, so it has changed my algorithm. I'm not using many hamstrings anymore, although I think that's a great graft for 30 and over as well, but I'm definitely not using hamstring in the younger people, and I use patellar tendon when people want it, but that's usually my secondary graft.

Dr. Justin Arner:

Before you started doing all the quads, was hamstring or BTB more commonly used in those high-risk populations in your practice?

Dr. John Xerogeanes:

I used to do a lot of hamstrings, probably 65, 70% hamstrings. I still did patellar tendon in a lot of my contact athletes, in my football players, and that is what I've replaced with the quad tendon. It's a huge graft and the big guys do even better with it. Now what to use in a small female that's 16 years old, I don't think any of us have a great answer for that one.

Dr. Justin Arner:

Yeah, certainly risky, these soccer players that have deficiencies in their glutes and everything is just such a troublesome and difficult situation. Tell us a little bit about your study. Getting back to the arthrofibrosis risk, which we really didn't have any data on this graft or really too many studies looking at BTB or hamstrings, so this is a really interesting one.

Dr. John Xerogeanes:

Well, if you look at what happens, we started looking at strength, and what we noticed is that the average female athlete had a 37% deficit at six months in LSI or peak torque to body weight. Average male had 27%. That was true with our patellar tendons too. There's strength deficit, and the outliers are all people that we noticed had extension deficits. By that it's either shy of full extension, but we also noticed that the people that had hyperextension on one side and got to just neutral on the other side. It fits with what... Chris Harner used to talk about that a long time ago and he had a reoperation rate at 15%. We all thought, God, what's he doing, he must be doing something crazy. Well, I think his litmus test for when to get in there and go after it was just he had a hair trigger there.

Don Shelbourne has talked about it for 30 years and he's very aggressive at going in with three degrees of extension loss. He goes in. So then we started looking how well they did once we went in and when we did go in we saw cyclops lesion almost on everyone and they had some scar tissue around the patellofemoral joint, which is what Dick Steadman always talked about. So we go in there and just take a trocar, go around the kneecap and that just kind of loosens that stuff up. Then we go down, take out the cyclops, maybe do a little superior heat ablation, kind of a superior notchplasty, but not cutting a bunch of bone. They get extension back and immediately in post-op they look at you and say, "Hey, I feel better. It's like someone took a vice off my knee." You put them back into PT, they get extension, you got to work hard on it, but they got it back and they hold it and then their strength starts skyrocketing up.

So that's where we started noticing and then we went back with this paper and said, okay, what is our percentage? And we found certain risk factors because we didn't know what they were going to be. Definitely that younger female, definitely if you do something else inside their knee like a meniscal repair. And then if you use a big graft, which Freddie's talked about, Shelbourne's talked about, make sure the graft matches. Now the difference between this graft and a patellar tendon is where a patella is 10 by 3.2. If you do a 10 millimeter graft, 10 millimeter diameter, that's a big graft for the notch when the native ACL is skinny in that part of the knee. So we started really... It was very tempting to put a 10 millimeter graft in people and really you want to be 8.5 to nine in most of these people. And probably when you do kids you want to be closer to eight.

Dr. Justin Arner:

Yeah, that's a great summary. I think we were talking about before the podcast, especially younger surgeons who don't run into this too often. When we first see our first few cases like this, certainly we want to wait and see if they're going to get better. But with your experience in discussion, it's probably better for them getting their strength back to just like the bulletin, it's probably a much easier and quicker surgery rather than trimming out scar tissue for an hour and doing a posterior capsular release. So the medial portal, if you get to them quickly, they kind of turn the corner. Is that what you have experienced?

Dr. John Xerogeanes:

Absolutely, and I'll tell you for the younger surgeons, the most important thing I do is pre-op, I tell them, "Look, there's about 7% incidence of this." And when I have the young females and I say, "Look, this is a real possibility, we got to work super hard and be aggressive at extension, you got to get the PTs on board to really push it." You're not going to stretch these grafts if you use knee braces. You got to make sure that they go in the hyperextension because a lot of people put them in knee braces and then the person limps around on this thing at 20 degrees or 10 degrees of flexion, it's going to be a problem.

So we don't use knee braces, you put them on with crutches and say heel-to-toe walking and force an extension. After day four, the balance and everything will be there with the crutches. And we do that until they can walk. Two weeks or before and not before, we let them off when they can walk without a limp. But we keep them on for at least two weeks and really push it and most of those people will keep their extension. If they don't then I'm usually in there between... I'll give them about six or eight weeks and then I'll go in and do do a quick scope on them.

Dr. Justin Arner:

Yeah, great advice. The knee brace makes us all feel better but maybe it really restricts some of this motion like you're saying, these young females, especially.

Dr. John Xerogeanes:

Bert Mandelbaum never used any braces just because in LA they couldn't get them to pay for them, insurance, and I stopped using them probably about 2000 when I did a ACL on my girlfriend, who's now my wife. So she breaks up with me, I did a hamstring on her, she did fine and then she shows up to my house a week later with no knee brace and she goes, "I hated that thing." No one ever wears them. And then she did fine and I asked my patients, most people take them off, they don't like them. So I stopped using them. And my question to all these guys have been around a while is, when have you ever seen anyone fail in the first six weeks? Our KTs are all fine. I have 20 years worth of data. They don't fail then. So my thought is they don't stretch out. I don't think they do much good at that point.

Dr. Justin Arner:

Yeah, for sure. One thing I wanted you to tell all the listeners is that I've heard your great tips about regaining that extension early on and what you tell the patients and what you tell the therapist. So could you share all those pearls that you've realized, especially with the quad and getting that knee moving so you don't have an extension deficit early on?

Dr. John Xerogeanes:

Yeah, what I think is important to teach people preop, short-arc quads and make sure they understand that when they're flat on the bed and they fire their quad and push the back of their knee down, that heel usually comes off the mat or the floor and you got to get them to do it so they understand what it looks like preop. They have to understand what a prone hang is and how they relax their hamstrings and what we're looking at and what we're looking for.

And then I make a video that I send them where I'm pushing down on their tibial tubercle and pulling up on their heel. So I push down one arm pull up and I make them feel what that feels like. It's not comfortable. But if they can work on that stuff beforehand, then they get their motion back before you operate on them. Then afterwards they understand what they got, they understand what normal is and now they work on it and they'll push hard to get back there. But if their mom's too worried about doing it, if the therapist is not aggressive enough and if people are worried about causing a little bit of discomfort, then they got a problem.

Dr. Justin Arner:

Are you having people get motion from about zero to one 20 or there's been some discussion of maybe that's not necessary but certainly that's the typical teaching

Dr. John Xerogeanes:

You mean before surgery?

Dr. Justin Arner:

Yes, correct.

Dr. John Xerogeanes:

Yeah, I think Steadman used to always say a cool knee zero to 90 and full hyperextension. And I think the only thing I would add is I want that to be active. If they don't have a short-arc quad before surgery, they're going to have trouble afterwards. So the Europeans, Bertrand Sonnery-Cottet will talk about, he thinks it's really important to get that full flexion back too because he said look that you got to get that whole capsule stretched out, then they're going to feel better and do better afterwards. So I like that to be a really cool knee and I think we're better off waiting a little bit before we jump in there at surgery. If you try to get there too fast, you're going to have issues after.

Dr. Justin Arner:

So your study looked at the cyclops like you mentioned and you really saw that in most cases. Have you seen more generalized arthrofibrosis much with the quad or as you mentioned, it's really usually the cyclops that you've come in contact with?

Dr. John Xerogeanes:

Yeah, generalized stuff is probably the same incidence, 1% probably or that we saw with any graft. And that's a difficult problem. The true arthrofibrosis where you go in there and things just are sucked down, that's pretty rare. What you'll see is you see that cyclops and it could either be based traditionally from the top of the notch just hanging in there and sometimes it's also on the tibial side.

And I think that the quad, it synovializes so well that if they don't get extension it'll fill up and then you start pushing it and then balls up on either the tibial side or off the notch. So I think, true arthrofibrosis is probably no different with any of these grafts because I think that's a genetic thing. But I'll tell you that the cyclops, I think I see it more with these, although Don Shelbourne, he says it'll happen with any graft. But maybe I studied this more so I'm more conscious of it. But if you don't get their extension, they're going to form it and that's why you just got to go in there and clean it out if they don't get better.

Dr. Justin Arner:

Good lesson to get aggressive quickly. You mentioned that, which I think is really important, that the possibility of why you get a cyclops lesion. People say, "Oh the graft is so big," which may be part of it, but that passive extension, maybe the quad takes a few days to wake up and like you mentioned, it may not be the graft itself, it's from that lack of passive extension staying there. So I think that's a good concept for everyone to understand that which one happens first. Is it because the space is there and it's the synovium or is it the graft itself? So I think that's a great point you made.

Dr. John Xerogeanes:

Right. That's the big unknown. And then the second thing we're quantifying now because we're getting serial MRIs on all of our people. We have a study going and the graft hypertrophies, all these grafts hypertrophies, and when does that start with the quad and how aggressive is it between zero and three months? And it's going to take looking at different volumes. We didn't know in this paper whether it's the loss of extension that leads to weakness when firing in the quad or do they have the weakness when firing the quad and they can't do that short-arc quad, thus they get the cyclops. That's the unknown, the chicken and the egg thing that we don't really have proof of. But if you talk to people that have studied this, if you can't get it straight, this thing's going to hypertrophy and then you're going to end up with the cyclops and then everything's downhill from there.

Dr. Justin Arner:

That makes a lot of sense with the hamstrings, especially revisions, we've all obviously seen the tunnel widening. Since you've done so many of these and have done them longer than almost anyone, have you seen any tunnel widening with quads or what has been your experience that way?

Dr. John Xerogeanes:

I just got back from the ACL study group and we talked to guys all around the world that are doing quads and we're not seeing a lot of tunnel widening. Now at Ohio State they're doing some really interesting stuff where when you get this massive tunnel widening, when you go in there on a revision, you know got to think infection number one like this, the subclinical staph or some staph epidermidis type of infection. So they've gone in and they cultured it and they didn't find much, then they did DNA analysis and it's like some sort of indolent infection. So when you see that tunnel widening, they want you to go in, curette it out, even if you put bone in there, mix it with vancomycin or tobramycin and then go and do your single stage revision, wash it out and put some tobramycin or vancomycin powder there.

But we see more of it with a hamstring that may not be related to infection but it's because I think we're trying to figure out why maybe there's multiple loops, there's more motion, there's also more synovium in the tunnels and we just don't see that yet with the quads. You're not putting as much in either. So when you do sockets, you only drill in 20 to 30 millimeters of the socket to put the quad in. It's not like when we were first doing a hamstring you'd put a 30 millimeter, 40 millimeter tunnel. We aren't doing that. So I'm not sure we're comparing apples to apples. But short answer to your question is we're not seeing as much tunnel widening.

Dr. Justin Arner:

Yeah, that's certainly have been an issue. So there was a study I saw from Pitt here a few years ago that whenever you're doing revisions if you've taken a BTB in the past and then are you thinking of quad revision? Have you done a lot of those quads on the ipsilateral knee after say a previous BTB? And what's been your experience with the quad and the extensor mechanism taking a double hip? Do you use the same knee or do you ever go contralateral?

Dr. John Xerogeanes:

So we published on a hundred of those where we took a hundred revisions using quads as the second graft. Now those weren't all patellar tendons, some were hamstring. When we looked at the patellar tendon, there's no difference in strength at six months, whether it's a primary or whether we did a quad after a patellar tendon. Now at the ACL study group, obviously the Pitt data and some of the other guys from Europe have showed no difference either.

Now the thing you got to be careful about is if you take a bone plug on the quad. So for an all-soft tissue doesn't make any difference. But if you take a bone plug from both sides then I'm scared to do that. Most of the Europeans don't do that because they worry about fracture. Now that could be more theoretical, guys taking big bone plugs from both sides obviously have had fractures. The Europeans take just a sliver. Christian Fink will take a sliver of the cortex when he is using bone. But Hugh doesn't like, after patellar tendon, he'll take just soft tissue and maybe some periosteum. He never gets into bone. Because the fear is not the weakness, the fear is the fracture.

Dr. Justin Arner:

Right, for sure. And that can be a devastating thing, which is certainly one of your positive discussions that I've heard you discuss about not worrying about kneeling pain and fracture. And just to get on that topic, tell us some of those things that I've heard you say before about what you like about the quad say versus BTB regarding just graft harvesting and...

Dr. John Xerogeanes:

Sure, I'm not a zealot so I mean I like patellar tendon, it's a great graft. It's just you're sawing, you're hammering and there's things that could go wrong with that. Now I've never had, thank God, an intraoperative fracture, but I've had a guy fracture his patella almost a year and nine months after we harvested it. But it harvested right along that stress area of the distal patella where we took it from. So I'm sure it was related and we fixed him, he did fine, actually played with the Giants afterwards. But it happened.

And the nice thing of the quad is you do an all-soft tissue quad, you don't get frontal knee pain, you don't get numbness, it's much faster. The scar's much better and you get a bigger thicker graft with more collagen per cross-sectional area. Now I give that talk and these meetings saying this is better. But the reality is they're both great grafts. Their outcomes are almost identical and I don't think there's

anything wrong if you do one, you can do the other one after. And I just think for in my hands I like it because it's faster and less morbidity when you're doing it. Outcomes wise, I think it's the same.

Dr. Justin Arner:

Yeah, that's great. Could you tell us a little bit about some of the pearls regarding harvest technique that you've published on and the length of the graft that you typically take and full versus partial thickness? These talks you give are awesome, so I'm sure everyone would love to hear that.

Dr. John Xerogeanes:

So I don't think it matters whether you go longitudinal incision or horizontal. I switched to horizontal because the Europeans said it was better cosmesis and I actually like it because most of your work is done distal on the graft. You don't have to do much approximately. You got to be really careful and diligent about whatever you use for harvesting. I think your distal two and a half centimeters of the graft need to be clean and cut. And if you haven't done very many, I like to go full thickness, full thickness and have that nice 10 millimeter to nine millimeter tapered rectangle, clean. Then if you've cleaned and removed your fat from the scar, do a wide excision of the fat when you make your incision. And then you put an Army-Navy up and you can look up there and you'll see your rectus femoris and then your vastus lateralis and medialis. You can always see the medialis and the rectus femoris.

Then you know the direction that you need to harvest, then that double blade knife works perfectly. You can use the quad, the one that is circumferential if you want. There's a myriad of ways to do it, whatever you're comfortable with. But you need to know the direction and you need to get that distal part figured out. And the nice two and a half centimeter circumferential clean segment of tendon, whether you do it full thickness or partial thickness doesn't make any difference. But you got to close that defect if you're full thickness, if it's a great big guy. So if you look at the sagittal X-ray and he's 10, the 12, 13 millimeters thick which some of these big D linemen are, then you want to go partial thickness because otherwise you get too big a graft and you can always cut that graft down, but it's a big, big graft.

But most people have that seven to eight millimeter, just go full thickness. And one of my fellows just made a really good video that'll be on arthroscopy techniques that shows how he closes it using one of those rotator cuff self-retrieving suture passers and use an absorbable suture when you do that because if you tie the notch, if you use a fiber wire or something, they'll feel the knots and they won't like it. So those are the main things. As far as the length, you never need more than seven centimeters. I got in trouble my second one, Freddie got in trouble in some of those early ones because we went eight, eight and a half centimeters. And then you're going to get into rectus and that's where all those bleeders come across. You can end up with a compartment syndrome, post-op hematomas. You got to be really careful not to go too far proximal, try to stay away from getting into the rectus.

Dr. Justin Arner:

Yeah, great tips. We appreciate your experience in teaching us how to stay out of trouble. So I think I've done full thickness as well, but I have run into that exact case. Actually, kid I grew up with that I played baseball with is this big manual laborer and he had the thickest quad. So cutting that down is what I ended up doing.

Dr. John Xerogeanes:

Well, every mistake you can made, I'm sure I've made. So I just remember the mistakes I make and I'm sure there's something else I'm going to do, but I've made the mistakes, I write them down and hopefully I can prevent others from doing that.

Dr. Justin Arner:

Yeah, I appreciate that. You mentioned the young group, the young soccer player or whatever, 13 to 17 or 20 or 22. Tell us a little bit, it's a little off-topic, but tell us, are you ever performing LETs or any lateral tenodesis in these high risk hyperex, say female young people with quad primarily in 2023?

Dr. John Xerogeanes:

We don't have data to say it's necessary, but with the Stability 1 study out of Canada, Al Getgood showed that he had a huge, with these type of people, a huge decrease in failure rates. When he did LET in France, Sonnery-Cottet showed that he had a big two or threefold decrease in and failure rate when he applied the LET to that type of operation to the same type of person.

So I've been using the criteria, if someone comes in and they have bilateral injuries, it's a second operation in this age group or if they're hyperlax, if they hyperextend seven to 10 degrees, if they have other areas of laxity, they've had a Bankart, they have super loose shoulders. Those people, if they're valgus or if they have a lateral capsular injury or Segond fracture, those are the ones I'll add it to. And I'm getting better at that operation. That operation can be a little tricky, but I think once you learn the tricks of that, it's pretty easy. And it doesn't seem to have much morbidity around the world. No one's talking about great morbidity. It just probably doesn't need to be done on everyone. But on those scary people from 14 to 22, like I said, I have 10% failure rate on average. I'm going to pick the ones out that I worry about and do it in the future.

Dr. Justin Arner:

I mean there's been so many studies by, as you mentioned, Dr. Fu and yourself and others. And for this one ligament, we still have a lot to learn. So it's an exciting time to continue to have these discussions.

Dr. John Xerogeanes:

It seems like we're going back to stuff, those aren't new operations, LET stuff. But it's interesting because when Houston did them and when guys did them in different parts of the world, they were doing that instead of an ACL and they stabilized a lot of these knees and then they went and did them with an ACL and then they all stopped doing the extra-articular. Once they had the arthroscopic two-incision ACL, they stopped doing it. And I think they threw the baby out with the bathwater there a little bit. I think they were good in some people and I think we're going to come back and not do it on everyone, but I think we're going to find people that hopefully this will help decrease that failure rate.

Dr. Justin Arner:

Stability tools will certainly help us with that, which is exciting. You mentioned some of your data that hasn't been published yet, that I saw you present before, about these young high risk athletes, which we really have no data on the quad. Tell us a little bit about that study that you mentioned previously and what else is on the horizon for you. You have such a great team down there with so many surgeries. So tell us what else is coming out of your group regarding the quad.

Dr. John Xerogeanes:

Well, this is the most, this is going to be ready to publish. We have 670 people I think that fit this demographic that are greater than two years. And on average about 71 months post-op. And we know that we have about a 10% failure rate on average, guys and girls, women and boys, women and men together in that age group. We know that in ours, the males had up to 14% contralateral injury rate at

average about 30 months post-op, where the females were only about 11 or 12%. So statistically different and the males were higher, which we really don't know why. But again, this really goes along very closely with the MOON data on patellar tendons. I thought it was terrible at first and Kurt Spindler sat down and looked at it all. This is what we're finding. So that's exciting because now we have some good baseline data.

We know who our group that will worry, because when you read papers and you see an average age of 30 or 27, it doesn't do us much good. I want an average age of 17 or 18, then I want that age group. Because that's the people we don't know how to solve this problem. So that's something that we're ready to publish now. And then also Greg Myer, who does a lot of the human biomechanics, has come down to join us and we opened up what's called the SPARC Center at Atlanta Falcons Training Facility. And it's basically, we have MRIs, most advanced marker list, biomechanics lab, and a lot of virtual machine learning and a lot of different training things for athletes using virtual reality. So we're going to get people, guy gets hurt, girl gets hurt, it's a higher level athlete from that age group.

We get them up there, we scan their brain, we scan both legs. We're looking at contractility, firing in the brain when you contract your quads, cartilage sequences, ACL. Then at surgery we get, we're getting fluid, we're getting cartilage biopsy and ACL biopsy. And then we repeat the MRI and then start our biomechanics testing at three months, six months, nine months, and then a year when we send them back. And we're compiling a huge database. And we do that every year going forward. So we're not only doing regular outcomes, but we're trying to get as much data as we can so we can go back and anyone who wants to mine it or has an idea can come in and mine our data. And it's taken a lot, we're still fun fundraising to keep it, but we have enough to get started and do the first couple years. But I think this is going to be a lot of really good data that will hopefully help answer a lot of the questions that you and I and everyone else has.

Dr. Justin Arner:

Yeah, that's awesome. A lot of exciting things to come. I think those high level MRIs and the biomechanics are in the next step rather than just the outcome scores or KT like you mentioned. So congratulations of getting all that together. That's a load of work.

Dr. John Xerogeanes:

Yeah, it's a lot. And Greg's been instrumental and has a bunch of brilliant PhDs, guys working and engineers working on this stuff. It's a great group. And the one good thing to come out of COVID is we learned that you don't have to have those people in your building. You just have to get the data. Most of that stuff, these guys could be living in Australia and crunch the data and be part of your team. So it's really opened up our ability to have Zoom meetings and then people can work from anywhere. And it's made our lives easier in terms of research. So that's the one thing to come out of the pandemic that's positive.

Dr. Justin Arner:

And if you're in a different time zone like Australia, you can get that data being worked on 24 hours, Atlanta, across the world. As we wrap up here, as we talked about before we started, Dr. Steadman just recently passed over the last few weeks, and I was a resident at Pitt and then was lucky enough to do my fellowship there where you got to work with Tim and Dr. Hawkins. So I just wanted to ask if you could share some thoughts about working with the legend, Dr. Steadman, and your memories.

Dr. John Xerogeanes:

It's sad because you learn that once you leave orthopedics, people forget about you. And most residents who are listening to this probably don't even know who he was. And I think he was a good surgeon or thought leader in terms of ACLs. And much of what he did was what we talked about tonight. He was very worried about arthrofibrosis. He was very worried about being very gentle inside the knee and really addressing motion, early motion. As soon as they got hurt on the hill, they get them on bikes and people ask, "How did they operate so early without a bunch of problems?" Well, as soon as these people got hurt, they got them on the bike, they got them moving, and then they'd fix them out there, which is controversial, right? Because then they'd come back to Pittsburgh or Atlanta or wherever and they'd be doing their rehab with you and never see these guys again.

But interestingly, Steadman had such a bond with patients that they'd fly back and do. It's different than now. Most people aren't going to fly back to see the guys there. And they're great guys there. There's nothing wrong with them, but they're not Steadman. At his time, there was only three or four guys in the world doing that. But he and Russ Warren and Jimmy Andrews and Werner Muller, all these guys, they trained so many good surgeons. And now there's a lot of people that can do that stuff. But the coolest thing about Steady is the way he captured the patient in the room. He'd sit there and he'd look at them and he made you feel like no one else was in the room. And he'd listen until the patient would start talking. Okay. He'd sit down and one day I said, "Hey Steady, how could you do that?"

Cause sometimes you get crazy people. I'd just go on and on and he goes, "Well, I just look at them and I think about earlier in the day when I'm hiking with my dog Jack and what we saw on the mountain and all that." So I thought it was pretty funny. But he said that a little in jest, but he always talked and he always listened before he talked and the patients loved him. So it was a great experience. But I probably learned more about relationships with patients than I did about surgery from Steady.

Dr. Justin Arner:

Certainly a legend. I never got to operate with him, but just meeting a few times and the stories people say about how he would have different athletes or people stay at his house and who just takes these kids from their rooms and they would do therapy right away. He'd be down there with the therapist, just really cared more than really anyone.

Dr. John Xerogeanes:

Yeah, great guy.

Dr. Justin Arner:

Yeah. Yeah. Well, thank you so much for your time today and your results and sharing your insight and really pushing the envelope with this and giving us the science for this new and exciting graft. And certainly for you it's not new after doing 2000, but all of your pearls are much appreciated and we look forward for those more studies to come. So thank you so much, Dr. X.

Dr. John Xerogeanes:

All right, Justin. Thanks for having me buddy.

Dr. Justin Arner:

Dr. X's article titled "Localized Anterior Arthrofibrosis After ACL Soft-Tissue Quadriceps Tendon Autograft Is More Common In patients Who Are Female, Have Meniscus Repair and Have Grafts of Larger Diameter" is impressed in the Arthroscopy journal and is available online. Thanks so much for

joining us. The views expressed to this podcast do not necessarily represent the views of the Arthroscopy Association or the Arthroscopy Journal.

Medical Disclaimer:

The information and opinions discussed herein, including but not limited to text, graphics, images, and other material contained in this podcast and its referenced paper are for informational and educational purposes only. No material in this podcast or its referenced paper is intended to be a substitute for professional medical advice, diagnosis or treatment. Specifically, all content and information in this podcast and its referenced paper does not constitute medical advice. Always seek the advice of your physician and/or other qualified health care provider with any questions you may have regarding a medical condition or treatment and before undertaking a new health care regimen, and never disregard professional medical advice or delay in seeking it because of something you were exposed to from this podcast or its referenced paper. The information discussed in this podcast and its referenced paper may not apply to every individual and may cause harm.