

Dr. Andrea Spiker...: Welcome everyone to the Arthroscopy Association's Arthroscopy Journal Podcast. I'm Dr. Andrea Spiker from the University of Wisconsin. Today, I have the privilege of speaking with Dr. Elizabeth Scott, who is currently completing her Sports Medicine Fellowship at Boston Children's Hospital, and will be starting practice this fall at Duke University in Durham, North Carolina. Dr. Scott was the lead author of the article titled Automated Text Messaging After Hip Arthroscopy: A Randomized Controlled Trial of "Post-op Buddy", which was published in the May 2022 edition of the Arthroscopy Journal. Dr. Scott's co-authors included Christopher Anthony, Michaela O'Connor, T. Sean Lynch, and Robert Westermann. Welcome, Dr. Scott, and thank you so much for joining me.

Dr. Elizabeth Scott...: Thank you for having me, Andrea.

Dr. Andrea Spiker...: Liz, it's not very often that we're fortunate enough to talk to surgeon authors on our podcast just as they're about to launch into their sports medicine and hip preservation careers. Can you tell us a little bit about your journey thus far and what your plans are for the future?

Dr. Elizabeth Scott...: Yeah. Again, as you mentioned, I'm currently at Boston Children's Hospital completing my Sports Medicine Fellowship and excited to be starting practice in a few short months here at Duke, where I will be doing predominantly hip arthroscopy. I did residency at the University of Iowa and undergrad and medical school at Duke. I'm going back home, so to speak. Really, since I went to medical school, early on I was, of course, interested in orthopedics and I developed an interest in the hip pretty early on, in part due to some own personal experience with hip issues. It's something that I continued to develop an interest in through residency and fellowship. Yeah, I'm really looking forward to developing a complex of arthroscopy practice.

Dr. Andrea Spiker...: Well, I've worked with you quite a bit through the years at conferences and courses. I think Duke is exceptionally lucky to have you. I really look forward to all that is to come in your Sports Medicine Hip Preservation practice. Especially you've quite a history of publishing on the topic. You're already an expert in this area. Speaking of that, this current article that we're discussing involves this Post-op Buddy. Can you tell us a little bit about the back story on what spurred this idea for the research project and then how this very novel idea of a Post-op Buddy came about?

Dr. Elizabeth Scott...: Sure. Yeah. This project, I laugh when I think about it. It actually started out as a sort of internal, almost like quality improvement study that I came up with as an intern actually. Then as we started to develop the idea, it grew into what ultimately became a prospective randomized control trial. But really, the project was an attempt to use automated technology to try to address some of the biggest issues that both patients and surgeons deal with in that early postoperative period after a hip scope. Again, I actually have history of being a hip arthroscopy patient. I experienced firsthand what those early weeks are like where you have all these tools you're supposed to be using at home, maybe braces, crutches, maybe a CPM machine, postoperative protocol. Even though I

was educated, I was a medical student and then a resident at the time, there was definitely still a certain amount of worry that I had as a patient about whether I was doing things right, whether it was following the protocol.

I felt like, "if I'm whatever, highly educated and know all this stuff about the hip and yet I'm as a patient worried about it, how does the average patient feel who doesn't have that education and social support?". Then from the provider end, being a hip arthroscopist, really you are worried about their compliance in that early period. Are they wearing the brace? Are they taking their aspirins? You hope they're keeping their weight off the leg and taking it easy in that early period, so they don't develop hip flexor issues. It's a lot of issues that are being navigated on both ends. A lot of times, that ends up in extra phone calls, there're emails that the patient is sending in, maybe even extra clinic visits. And a lot of times what's being transmitted is really information that they already received preoperatively. You're reminding them, "Yes, is this okay" Like, "Yes, this is to be expected."

We were really looking for a way to address that concern. Something that would be easy to do from the provider end and not take a lot of extra thought, but maybe could provide some of that reassurance and reeducation to the patient right in that critical period when they are at home in those early weeks, worried about their hip, trying to follow the rules.

Dr. Andrea Spiker...: That's a really unique perspective having been a patient yourself and then experiencing it from both sides of the patient's perspective as well as the surgeon perspective. And you're absolutely right. We give patients packets upon packets of information. They have online access to all of this information, but there's still so many questions that come up about their unique experience. This is a really excellent way of improving patient care and provider experience by giving them ways to answer some of those questions. I'll tell you. In my practice, one way I avoid some of those questions is I don't use a brace and I don't use CPM, so there are fewer questions related to that.

Dr. Elizabeth Scott...: For sure. Yeah. Again, everyone's protocol varies. But I'm sure you found that even as simple as you think you've made your protocol, patients will always have questions.

Dr. Andrea Spiker...: Absolutely. Now in this study, specifically you collaborated between two separate academic institutions. Can you tell us a little bit about the challenges that you encountered with cross institutional collaboration and then some of the ways that you were able to overcome those challenges?

Dr. Elizabeth Scott...: Yeah. Being a multi-site study, of course, there're early challenges of making sure you have IRB protocols approved at both sites and data sharing agreements, and things. The biggest challenge with this study being multi-site was really about making sure that we captured the needs of patients in both groups. The two surgeons practicing in this study were in New York and Iowa. Slightly different patient population, maybe in some cases, different education

level. Then the protocols themselves for the surgeons postoperatively varied a little bit. Even when they bring the patient back to clinic and those things can be different. We really had to be selective when we were creating the content for Post-op Buddy to make sure that it was applicable for a wide group of hip arthroscopy patients regardless of location, age, or surgical technique, or whatever.

Then actually from a very basic logistical standpoint, Chris Anthony was really the mastermind behind the technology in this study. He has a unique background in interactive telecommunications and computer science. He wrote all of the software for this completely on his own and there was no IT guy in this study; it was all Chris. He has a pretty wide skill set, but he ran into some problems with things like the differences in time zones and the timing of the messages. Little things that we wouldn't have had to deal with if it was a single site study, but we really felt like including, again, a wide group of patients and not just those from one single provider would give us a much better idea about hip arthroscopy patients and how they respond to some of this technology.

Dr. Andrea Spiker...: That's excellent. Now this study also represents the very rare level 1 evidence prospective randomized study. Can you share with us some of the differences you've noted in setting up this type of research question compared to some of your other prior publications?

Dr. Elizabeth Scott...: Well, again, this started out as just a small idea that we were going to run internally. Then as we started to expand it and turn it into a multi-site study and be prospective, we did have to start to carefully plan what we were measuring and how we were doing it. Technology like this can be really tricky because you don't necessarily know what the potential impact of it is. You think you do, but it can be a little bit difficult to figure out what metrics to study. Of course, we collected pain and function PROs, but we really weren't thinking that that was going to be significantly different between our groups.

What we were really trying to study is something a lot more subtle. It's really more about their subjective experience after surgery that we're hoping potentially improves compliance and satisfaction with their providers, but not necessarily. We're relying on the surgery to improve the functional pain overall. We looked at a lot of different objective things we could measure like patient columns to the clinic or extra clinic visits, or even postoperative complications and ultimately given the multi-site nature of the study and sort of, again, the variety of protocols that could be used. Eventually we settled mostly on focusing again on pain and function PROs, but then there're subjective scores for satisfaction with the team and communication, and then compliance with all of the different pieces of their protocol.

Dr. Andrea Spiker...: Yeah. And that's an excellent point. There really isn't a way to measure that subjective satisfaction. We have a number of patient reported outcome measures that measure function and are attempting to get to those more subtle factors associated with patient good outcomes and satisfaction, but it is

challenging to figure that out. We'll get to it a little bit more as we talk about your results, but maybe ultimately there is more of a difference in these groups than we're just able to measure.

Dr. Elizabeth Scott...: Yeah. So exactly. In retrospect there's always a thousand things you can think of, "oh, I should have measured that" or "that would've been good to look at". Hindsight's 2020.

Dr. Andrea Spiker...: Yeah, absolutely. Now the intervention group in your study received text messages intermittently for about 90 days after surgery. You spoke a little bit about Chris Anthony's genius in making this work technologically. But how, on a more granular level, did you guys make this work? Was there an app that you plugged phone numbers into? Was it a website? How did that actually work? And then, can you give us some examples of the text messages that the patients received? And then how often did they get these? Were these daily messages? Weekly?

Dr. Elizabeth Scott...: Yeah. So the key with this study is that we specifically did not want to have to use an app or any kind of complicated software or even website that the patient would have to go to or download on their phone. It really was just SMS text messaging. It's something that's really ubiquitous. If you have a cell phone, you can receive text messages. And it also meant that then, we knew it would truly be essentially free to the patients where they weren't relying on wifi or heavy data use. Being text messages, that meant that you are limited to a number of characters of texts that you can send at a time. These really became little sort of bite-size messages that the patient was sent.

It spanned 90 days and in the first few weeks it was a daily message. So one text message, one little mini paragraph per day. And then starting at about three weeks, it expanded to be once a week, because we knew that in that early period, that's where most of the questions and concerns happen. And then as they get later on, they're more active, they're out of the house. The patients are concerned with other things. We didn't want them to feel like they were getting too many messages from us.

And then, the subject matter... Chris and I wrote all the messages ourselves and really I tried to think about, "well, what was it at that time period that I would've really wanted to hear as a patient? What would've helped me or what can I imagine someone would want to hear?".

And so most of it was kind of four different categories. Some of them were really just repeating the post operative instructions from their packet. Saying, "yes, you should be putting 20 pounds of weight on your leg. These rules are in place to protect you. If you have a question, please call the clinic", kind of thing. We had some messages on pain control, which essentially reminded the patient that some discomfort was still normal, even several weeks after their hip scope. PT reminders to essentially say "continue to do your therapy. It's very important. It's really how you're going to get strong again, get back to sport".

And then there were a few that we sprinkled in that were essentially mental health sort of reminders, mental health theme, where it basically just said, "Hey, we know you're recovering from surgery, take it easy, take care of yourself. If you have a question, please call us. Here's the phone number" kind of thing.

And all that sounds super simple and it is super simple. But as we start to talk about the results here, patients really responded to it positively and really liked that feedback. Even though they knew it was automated, they knew no one was at the other end, they still liked getting the messages.

Dr. Andrea Spiker...: And were you able to also then integrate the patient reported outcome measures that you collected with these text messages? Did you have reminders about filling out post-op forms or was this done completely separately as far as the PRO measures?

Dr. Elizabeth Scott...: Yeah, it was all integrated via text message. So there were no reminders for PROs because the patient received the PRO through the text message software. That was something that we actually had to first evaluate and actually validate on our own before we even initiated this study. We actually did an earlier validation study that was published in J Hops in 2020, just using the WHO's short physical function and WHO's pain subscales. Administering them again via that SMS text message and then validating against in-office electronic completion on a tablet to make sure they were equivalent. At least we knew going into the study that yes, patients were able to complete these via text message and they didn't mind, it wasn't a problem.

Really all that happened was that, on the day they were supposed to receive the survey at whatever time specified, they would just start to receive the questions in order. And they had to text back a response whether it was a number or a word about their pain and their function. I should add, it actually sent them reminder messages. So if they completed two questions and then they went about their day and forgot, it would ping them a couple times over a 24-hour period and say, "Hey, please finish. Here's the question again". And we found by using that technology, we had excellent collection of PROs. Again, because a patient can ignore an email, but we're always on our phones. So it's a really nice way to access the patient where they can't get away from it.

Dr. Andrea Spiker...: Yeah. That's fantastic. Now, tell us a little bit about what you saw at the end of these 90 days. Did you ultimately find that there were a lot of differences between the groups who received the text messages and the control group, which just received the standard perioperative education?

Dr. Elizabeth Scott...: Yeah. Overall we were able to enroll about 120 patients, all who had surgery for FAI. There was one who had synovial chondromatosis. Half of those received the messaging. As expected, good improvement in pain and function, PROs at 90 days from their hip procedure. And we didn't see a significant difference in those PROs between the two groups. But again, that really wasn't what we were really focused on looking at or measuring. We were very happy to actually find

out that they rated both providers very highly on communication and satisfaction in both groups, regardless. That's good. Both providers are doing a good job. But we did notice a few things. One is that the patients just really liked receiving the messages. About 78% responded that they felt like the messages made them feel more connected to the team and all but one patient said they would definitely want to receive the text again, if they were having another hip surgery and they felt like the frequency was fine.

I will say both providers had some patients who came back to clinic and specifically brought up the study and Post-op buddy and how much they liked it. And I think that's really remarkable from our standpoint because all we did was load their phone number into a software algorithm and then we forgot about it and it did all the work. Something that's that simple to implement, to have such a positive response from the patients, that's really where I think the goal is in this study. That this technology may be a really easy way to improve patient's experience after surgery.

Kind of more on that note, we did notice later looking into it that all but one rated handful of kind of lower communication satisfaction scores, as there always is. There's someone out there that has a problem with whatever they experience, but all of those patients were in our control group. So all of those were patients that didn't receive the messages. You just kind of wonder, the messages may have more of an impact than we even realize for the right patient. That's really looking for that sort of reassurance. We didn't do this, but it'd be really interesting if we had expanded the numbers quite a bit more if we would've seen kind of more of a difference in some of our metrics.

Dr. Andrea Spiker...: Yeah. And getting back to the point that you just may not be able to measure some of these more nuanced improvements in patient satisfaction and communication, just given the limitations of our current patient reported outcome measures and other indices and metrics that we use. I guess that gets to my next question. Do you plan to implement postoperative text messages in your practice? And why or why not based on your experience with this study?

Dr. Elizabeth Scott...: Yeah, I would like to see it as something that's optional, so patient could sign up for it if they are interested in doing it. And that way they're kind of self-selecting. So if for some reason they don't love being messaged every day, they can just opt out. But again, it was such an easy thing to write and then implement that it's kind of like a "why not?". If it helps some patients and maybe might prevent a phone call or two to you or your nurse or an email, I think those are, it's kind of low hanging fruit. I definitely would like to figure out a way to implement this in my own practice and I could even see expanding it. Not just hip arthroscopy, but there's a number of procedures that you could write kind of a separate sort of dialogue for the messages and potentially use it for variety of things in sports medicine.

Dr. Andrea Spiker...: Yeah. Well, I'm certainly convinced I would love to talk to you more offline about it because I would love to implement something like this as well.

Thank you so much, Dr. Scott, for sharing your thoughts with us today, it's really been a pleasure speaking with you. And this has been a fantastic study that you have published in arthroscopy with really promising results for the future of our hip arthroscopy practices.

Dr. Elizabeth Scott...: Thanks. Yeah. Again, this was a really actually fun study to put together and with larger numbers, would we have seen more of a difference? Who knows. But I do just want to put out there that we really need more studies like this. Integrating technology is a little bit trial and error and you don't always know if it'll work or if patients will like it or if it's going to speed up or slow down your clinic. But medicine requires innovation. And in some ways I feel like orthopedics and medicine where a little bit behind a lot of other industries in terms of integrating technology like this. I would just encourage other people out there to continue to push forward and put out new ideas as far as how to communicate and reach out to patients.

Dr. Andrea Spiker...: Thank you. That's an excellent thought to end on. Dr. Scott's article, titled automated text messaging after hip arthroscopy, a randomized controlled trial of Post-op buddy can be found in the May 2022 issue of the Arthroscopy Journal or online at www.arthroscopyjournal.org. This concludes our episode of the Arthroscopy Journal podcast. As always, if you enjoy our podcast, please leave us a five star review. Thanks so much for joining us.

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