

Dr. Chris Tucker:

Welcome to the Arthroscopy Journal Podcast. I'm Dr. Chris Tucker from the Walter Reed National Military Medical Center and the podcast founding editor. Today we are excited to be hosting our annual episode in which we feature the 2022 Arthroscopy Journal research award-winning papers. I'm joined in this discussion by my other Arthroscopy Journal Podcast co-hosts, Dr. Andrea Spiker from the University of Wisconsin, Justin Arner from the University of Pittsburgh Medical Center and Travis Dekker from the United States Air Force Academy. We'll be doing a round table discussion format in which we review the various 2022 award-winning papers, which were announced in the January 2023 issue of the Arthroscopy Journal.

Thank you to you all for taking the time to get together for this call. Very excited to discuss the very best of the best papers from the large pool of fantastic research published in the Arthroscopy Journal last year. It seems to me like the quality just continues to skyrocket year over year, and these are only a few practice changing papers we've had the privilege of reading this last year, so let's get right into it.

The first article we will discuss is the 2022 award-winning paper for both, Excellence in Clinical Research and Excellence in Resident Fellow Research entitled, Multimodal Non-Opioid Pain Protocol Provides Better or Equivalent Pain Control compared to Opioid Analgesia, Following Arthroscopic Rotator Cuff Surgery, a Prospective Randomized Control Trial, which was authored by Toufic Jildeh, Muhammad Abbas, Laith Hasan, Vasilios Moutzouros and Kelechi Okorha, and was originally published in the April 2022 issue. Dr. Dekker, would you give us a summary of the article and your thoughts on its findings and conclusions?

Dr. Travis Dekker:

Well, Chris, thanks again for having us. It's been an honor to be doing this once again this year with a great crew that you've assembled between Andrea and Justin, along with the great podcast that you do on a monthly basis. Thank you for allowing me the opportunity to run through one of the most impactful articles that was seen in our Journal this past year. This was an incredible article with great timing as the national opioid epidemic remains at the forefront of national news and orthopedic concerns. I'll be taking us through the article entitled, Multimodal Non-Opioid Pain Protocol Provides Better Equivalent Control Compared to Opioid Analgesia Following Rotator Cuff Surgery, a Prospective Randomized Control Trial, coming out of the Mayo Clinic and I believe it will have lasting impacts on our practices as we continue to try and to find the perfect postoperative pain regimen that eliminates the need for postoperative opioids, so let's dive right in.

This was a single blinded randomized control trial where a total of 40 patients were enrolled comparing opioid only pain management versus that of a non-opioid multimodal analgesia regimen. The outcomes collected were solely patient provided and thus the providers were not blinded. They evaluated the visual analog pain scale for the first 10 days post-operatively, as well as looked at PROMIS Pain Interference Scale. And what they found was that non-opioid regimens are at least equivalent to that of opioids and if anything, provide better pain relief with less adverse events than the opioid only regimen. When they performed an advanced statistical analysis accounting for confounding variables, the non-opioid was found to be better than the opioid regimen at all time points. And lastly, the opioid regimen had increased adverse events to include more days with reported upset stomach and constipation.

This study performed by Dr. Jildeh, is a step in the right direction. I believe a lot of us have adopted multimodal pain regimens to include preoperative regional anesthesia, along with anti-inflammatories, acetaminophen, gabapentinoids, and additional pain limiting adjuncts. I think one of the most important findings from the study found that none of the patients on a non-opioid regimen required breakthrough medication, so it proved that their regimen worked.

In addition, the patients were satisfied with their pain control overall. We continued to weigh the risks and benefits of post-operative pain with the secondary effects seen from opioids and their chronic abuse. Finding regimens that can limit the side effects and avoid the risk of addiction are imperative as we continue to advance not only our surgical techniques, but patient care overall as a whole. The findings from the study give us ground to stand on as we continue to perform one of the most common procedures in sports orthopedics of rotator cuff repair, while also providing excellent pain control and limiting the effects of medicines that we traditionally used to prescribe.

Dr. Chris Tucker:

Thanks, Travis. Those are really thoughtful insights on that article. I think it highlights that the multimodal, non-opioid pain protocols are really showing some promising results, especially after arthroscopic rotator cuff repair surgery and potentially extrapolated to other arthroscopic procedures we perform. I agree with the editorial commentary that accompanied this article authored by Doctors Ackelman, Kim and Waterman, in which they stated that we should be good stewards of the musculoskeletal community, by proactively employing these evidence-based practices for establishing realistic patient expectations, for that post-operative period, especially with respect to pain management and pain medication prescriptions. I welcome anybody else's thoughts or commentary on this particular article.

Dr. Andrea Spiker:

Thanks, Travis and Chris. What an accomplishment to win both the clinical research and the excellence in resident fellow research awards this year. This is a great team and I'd say the future is bright, so I agree with what both of you said, and I thought the findings of this study were just incredibly encouraging with all of our attempts to try to decrease the amount of opioids that we're using in our patients. This really showed that thoughtful use of non-opioid medications can appropriately control post-operative pain and then at the same time avoid the short-term and potential long-term consequences of using narcotics. And I agree with you, Chris, while this was studied in the rotator cuff population, I can already see the potential utility of this across sports medicine and then actually across orthopedic surgery in general.

Dr. Chris Tucker:

Absolutely. Thanks for that input, Andrea.

Dr. Justin Arner:

Yeah, I would like to echo basically what everyone said, Dr. Dekker mentioned. We're still looking for that holy grail residents and PAs, and admittedly I'm sure ourselves want to cut down on phone calls in a busy clinical practice. So finding that optimal combination of medications is ideal and we continue to search for that, so this is certainly a step in the right direction and a well-deserved award-winning paper, so appreciate the opportunity to review it and discuss it here.

Dr. Chris Tucker:

Absolutely. I agree with Andrea that this was truly, I am not sure I didn't review the entire history of award-winning papers, but at least in the recent past and since we've been doing the podcast, this is the first time we've had a single paper win two of the four awards, so kudos to that team at Mayo and these particular authors for putting together such an impactful article.

We'll next review the 2022 award-winning paper for Excellence in Basic Science Research entitled, Dynamic Assessment of Femoral Acetabular Impingement Syndrome Hips, which was lead authored by our very own Andrea Spiker, alongside her co-authors, Andrew Kazuski, Travis Maak, Benedict Nwachukwu, Sherry Backus, Howard Hillstrom, Bryan Kelly and Anil Ranawat, and was originally published in the February 2022 issue. Dr. Spiker, first off, congratulations on your work and for being the lead author on this award-winning paper. We're privileged to have you alongside us and to share your summary of the article and your particular thoughts and commentary on your own findings.

Dr. Andrea Spiker:

Well, thanks Chris, and I'm so glad first to be a part of the awards podcast. Again, it's been a fantastic year podcasting with all of you and our entire outstanding team. I have to say I am so honored to have received this award for the best basic science paper. This paper was really a labor of love, and I really do have to give a shout-out to my co-authors, including Travis Maak, who is the first of us to begin work on this project, and then especially Andrew Kazuski, who is a PhD researcher at HSS in the Motion Analysis Lab. And Andrew's background in the kinematics, kinetics and muscular movement was really essential in translating all of the lab values that we got into clinical meaning. And then Anil Ranawat did a great job with a podcast with our own Dr. Arner, episode 124, where he really delved into some of the deeper meaning of our findings in this paper.

This study really came from the question of whether having bony morphology of femoral acetabular impingement changes the dynamic movement of the hip joint, and we know that when patients have a large CAM lesion or that extra bone on the femoral neck, it causes decreased hip motion specifically in internal rotation inflection, but that's when the patient's supine on the exam table. Now we also know that by resecting that CAM lesion, patients gain about 20 degrees of internal rotation on average, and that again is hip internal rotation as measured in the supine position.

However, when it comes to how the hip moves dynamically in FAI, there's really a lot of conflicting findings. So in this study, we used 3D motion capture cameras and EMG to compare lower extremity, rotational kinematics and kinetics, so looking at the angles and torques and powers of the various joints of the lower extremity. And we also look at hip muscle activity between a group of patients with CAM type FAI compared to a control group that did not have any evidence of FAI.

And then we had patients perform multiple tasks including walking stair ascent and descent, and then sit to stand. So some of the key results of this study were that patients with FAI walked at a slower, self-selected speed. They had diminished peak hip extension, but increased hip and knee flexion, and then in fast walking they had increased knee valgus. FAI patients also had less trunk rotation during stair ascent and we found that they had decreased activity in gluteus medias and medial hamstrings during multiple tasks. The increased hip flexion was a little bit counterintuitive, but what was happening at the same time was that these patients had less internal rotation of the hip with a side leaning trunk rotation.

So decreased motion in adjacent joints, created this obligatory increased hip flexion. And this is in line with some of the literature we're seeing in the arthroplasty world on the interrelationship of torso, pelvic and hip motion. And then the decreased gluteus medias and medial hamstring activity we found was what I thought was probably some of the most interesting parts of our results because I actually see this in my practice where people come in with weak abductors and no matter how hard they work, they can't get stronger until suddenly we take them to surgery, we take away their CAM lesions, and they're able to suddenly get more motion and then improve their strengths and especially those gluteus medias muscles. So this really supported the importance of evaluating not just the hip, but in adjacent joints, and I think that the findings of this paper really serve as a starting point to just better understand all of the tackle mechanics of FAI.

Dr. Chris Tucker:

Thanks, Andrea for that fantastic summary of your fairly complex paper. I think your paper contributes to the practice of all surgeons performing hip arthroscopy mainly because I think it further adds to our understanding of these movement mechanics of the patients who have this condition. You and your co-authors tackled the complex topic of this dynamic mobility assessment with respect to hip impingement and how that condition, like you said, can impact trunk and lower extremity range of motion, as well as these muscular activation patterns. I think your work is really invaluable in helping us hip surgeons decipher some of these relationships between the condition of FAI and then some of the other commonly associated pathologies and symptoms including abnormal torso, hip or knee mechanics. I know I spend a fair amount of time counseling patients on symptom control, both pre and postoperatively for these related pathologies, whether it's the SI joint, the lumbar spine, troch bursitis, the gluteus, tendonitis.

There's a laundry list of conditions that are associated with FAI, where the center of the problem wheel is the hip, but all these cogs coming out, can flare up in various ways, and I think your work is deservedly award-winning because it starts to really be a big stepping stone to understanding why patients have what they have symptomatically with respect to this underlying pathology. Again, congrats to you and a sentimental note when you mentioned it was a labor of love, my resident project, which I wish I could forget, was on limb socket kinematics for residual limbs and amputees, and that was all biomechanical analyses in the gate motion lab down in San Antonio, and that was hard work, so kudos to you, and we didn't generate any award-winning paper, you did. Congrats to you. That's really impressive.

Dr. Andrea Spiker:

Thanks Chris.

Dr. Chris Tucker:

Does anybody else have any other thoughts they wanted to share on this one?

Dr. Justin Arner:

I just want to congratulate Andrea again. I had a really great time with Dr. Ranawat discussing the paper, and this is how we push this field forward. It's pretty exciting in hip arthroscopy, how much we're learning and continue to learn like our predecessors in the shoulder and knee did, 20 years ago or more. We're living it now, so certainly articles like this are pushing the envelope and our knowledge. So appreciate a great summary and article and congratulations on the award-winning paper.

Dr. Travis Dekker:

I just wanted to congratulate you on this year that you've had, and this encapsulates the amazing work that you're adding to both the society and to the Journal. And this is an amazing paper, and I think as you summarize neatly, its going to continue to advance our understanding of FAI in its multiple components. Congratulations, a phenomenal paper.

Dr. Chris Tucker:

All right, our final article of the podcast is the 2022 award-winning paper for Excellence in Systematic Review Meta-Analysis Research entitled, Peripheral Nerve Block for Hip Arthroscopy Does Not Have Any Clinical Advantage Compared With Local Anesthetic Regarding Pain Management, a Meta-Analysis of Randomized Controlled Trials, which was authored by Eunsoo Kim, Won Chul Shin, Sang Min Lee, Seung

Yoon Ryu, Nam Hoon Moon and was originally published in the June 2022 issue. Dr. Arner, would you give us your summary of this paper and your thoughts?

Dr. Justin Arner:

Yeah, thanks Chris. I think it's really interesting that a lot of these articles are based on opioid consumption and again, I'd like to echo what everyone said before, it's a great honor and opportunity to be able to do these podcasts. I learn so much and get to speak with so many different people all over, so it's a great opportunity.

I think this meta-analysis is really well deserving of the award. Basically, it's a meta-analysis from Korea that found eight randomized controlled trials evaluating the effect of peripheral nerve blocks on opioid consumption as well as pain control and nausea, specifically in the first 24 hours after hip arthroscopy, which makes sense. These are mostly outpatient surgeries, so it was pretty limited in that regard. As the title surprisingly suggests, there's really no difference in these eight randomized controlled trials and opioid consumption or VAS pain score between those who received a nerve block and those who either had a local injection or didn't receive any treatment in the first 24 hours.

As we talked about with Dr. Dekker's paper, opioid consumption is such a big issue in the US and we've seen the transition to nerve blocks and catheters and now maybe we're doing more single shots and we're really still trying to hone in on the best treatment for these folks to decrease opioid consumption. But certainly blocks have increased costs and do have rare complications. Most people have one story or more of a few patients that were young and had issues from a nerve block, but certainly they really can give a lot of people pain control based on different types of surgical interventions and different types of blocks. But they also can somehow delay our surgeries if the anesthesia teams and things are caught up in other rooms, so it's really a big system situation that needs to all come together.

Like I mentioned before, this is really the highest level of studies with randomized controlled trials. Five of them were US based studies and one was each from the UK, Canada, and China. To summarize and to step back, the different types of peripheral nerve blocks commonly used in hip arthroscopy, which I typically don't use myself, but that have been described and are utilized pretty frequently are femoral nerve blocks and the fascia iliaca blocks, quadratus lumborum blocks and lumbar plexus blocks are the main ones.

This study basically broke down these eight different studies and measured the pain levels at one hour and then somewhere between three and six hours after surgery and then 24 hours after surgery. They also evaluated nausea and vomiting and patient satisfaction and compared them between either a control group or a group that received one of these nerve blocks and it was a mix of different types of nerve blocks that were evaluated. 260 patients of the eight randomized controlled trials, had a nerve block, peripheral nerve block and then there were 256 control cases, so different medications and dosages and types of nerve blocks, like I mentioned, were utilized and generally anesthesia was also utilized in seven of the eight studies with one study using spinal.

Four of the eight studies for the control group used different types of local injections and five of the eight studies also use multimodal pre-op pain medications. There's a really nice table, table one, in this article that really goes through all the different level of evidence, the type of nerve blocks, the type of blinding, the sample size and other interesting parts that I think are beyond the discussion here today. But as I mentioned, there was no difference in opioid consumption, VAS, nausea or vomiting or patient satisfaction, and whether a patient received a nerve block or was in the control group. One thing that the authors mentioned which we're familiar with is that, the femoral nerve block has been associated with possibly having some increased fall risk and one of these studies of the eight, had six of 27 patients that fell in the first 24 hours.

That history has led like much in the knee with abductor canal blocks and the hip is, fascial iliaca blocks that have been an alternative. There has been some discussion that some sensory nerve issues can be related to those. But anyway, there's been a mix of findings of different studies and different types of surgeries. For example, in hip fractures and total hips, this type of block has been shown to be pretty helpful and they're found to be really no different than the femoral nerve block and some previous other lower level studies that weren't included in this meta-analysis of the randomized controlled trials showed mixed results.

In summary, and personally I haven't really seen a serious issue with pain control after hip arthroscopy, but certainly I'd love to hear Chris and Andrea's experience. I know they do a lot of hip. I think maybe this is to doing more post-less traction, but I think this meta-analysis fairly clearly maybe put the idea of nerve blocks to rest, at least in hip arthroscopy. It doesn't really seem like they're super helpful, so I really commend the authors on this really clinically important study and I think it's a great decision from the Arthroscopy Journal to award this paper, an award-winning paper, just it has so much clinical impact and something like we just spoke about, it's certainly a topic we continue to learn about. Thanks again for the opportunity to do this and be involved in this. I'd love to hear what everyone else thinks about it as well.

Dr. Chris Tucker:

Thanks, Justin. I think you hit a lot of the salient points nicely and summarized the takeaways from that article. I think the article highlights the challenges associated with the perioperative pain control around hip arthroscopy and as you stated, somewhat unexpectedly concluded that there is no difference in pain control between local anesthetic and peripheral nerve block anesthesia, at least for that first 24 hours after surgery. As with all great research, this does generate some more questions in addition to answers, so I don't think that it has fully closed the book on it. I think there were a few limitations. As you said, it was a grab bag of peripheral nerve blocks that were compared. A big one of which that wasn't included is the pericapsular nerve group block or the PENG block, which is actually what we use at our facility and have for at least the last three to five years.

As you mentioned, the impact of peripheral nerve blocks for hips is sort of unique from other areas of the body, due to the various innervation of the hip capsule being much more multifocal and also that falls risk, which is a real thing and has been documented in multiple studies. So eliminating that involvement to the motor branch of the femoral nerve, which you get with a direct femoral nerve block or the fascia iliaca, which we had used at our institution previously, you can eliminate that with a sensory only block and that's the modality that we are currently using.

I think as you said, the transition to post-less traction has been a major factor in the pain control that we were seeing in the immediate post-operative period, that we were seeing with the post. And so I think that's another factor that would need to be controlled for in follow up research. I think putting that all together, I think we still haven't found that holy grail which we're seeking. But Andrea, happy to hear your thoughts as well on the topic.

Dr. Andrea Spiker:

Yeah, thanks Justin and Chris. I was really glad to see this study in print. I'm often asked by our anesthesia team on a pretty regular basis, whether I'd like to try the newest block on the block. They hear about something at an anesthesia conference or they read about something in a journal and every time they bring these up, my concern is in line with what both you, Chris and Justin mentioned, that so many of these blocks have really resulted in increased risk of falls, but really no benefit in pain control. So this article really supported my current practice, which is that a majority of my hip arthroscopies are

done under spinal anesthesia, and then I use a peri-capsular block, just quarter percent marking plane. And we actually published our findings on neuraxial anesthesia in Arthroscopy Journal in 2021 and found that spinal anesthesia tends to result in lower morphine equivalence consumed immediately postoperatively. I think as both of you said, this really supports current practice and I think I will not pursue any of these new blocks as they continue to come out.

Dr. Chris Tucker:

Great. Well, I think that wraps up our discussion of the three award-winning papers from 2022. I want to thank all three of you, Justin Arner, Andrea Spiker, Travis Dekker, for joining me for this episode, but more importantly, for all of your incredibly hard work, time and dedication throughout the past year hosting all of our podcast episodes. It's been an incredibly rewarding journey to log yet another year's worth of fun, educational, and I hope at least partially entertaining podcasts. As always, we continue to strive to deliver the best of what the Arthroscopy Journal, Family of Journals has to offer, directly from the source with our behind the scenes discussions with the authors themselves. I think we all have an incredibly bright future ahead for 2023. Thanks again to everybody.

Dr. Andrea Spiker:

Thank you.

Dr. Justin Arner:

Thanks everyone.

Dr. Travis Dekker:

Thank you very much.

Dr. Chris Tucker:

This concludes this edition of the Arthroscopy Journal Podcast. The views expressed in this podcast do not necessarily represent the views of the Arthroscopy Association or the Arthroscopy Journal. As always, if you enjoy the podcast, please leave us a positive review and we welcome your comments and your feedback. Thank you for listening. Please join us again next time.

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