Welcome to your Arthroscopy Journal Podcast. I'm Dr. Chris Tucker from the Walter Reed National Military Medical Center, and founding editor. Today in the podcast, we are discussing outcomes in treatment of OCD lesions of the knee, and a potential impact of gender. I'm honored to welcome back to the podcast a good friend and colleague of mine, Dr. Mary Mulcahey, who is, as anyone in our field is probably already aware, very accomplished well beyond her years. Dr. Mulcahey is a triple threat on the fronts of first education, as both the Assistant Program Director and Assistant Dean for Faculty Affairs at Tulane University School of Medicine. Second, she's a clinician with a focus on the care of the female athlete as the director of the Women's Sports Medicine Program. And finally, she's a tireless advocate for gender equity and inclusion in medicine, currently serving as the president of the Ruth Jackson Orthopedic Society.

Dr. Mulcahey was the senior author on the paper titled, Males and Females Exhibit Comparable Outcomes Following Treatment of Osteochondritis Dissecans Lesions of the Knee: A Systematic Review. Which was recently published in the October 2022 issue of the Arthroscopy Journal. Her co-authors include Bailey Ross, Christina Hermanns, Shin Xu, Jordan Baker, Bryan Vopat, and Cadence Miskimin. Mary, I always enjoy our talks and getting emails from you, but honestly, sometimes I get tired just reading your signature block. I have no idea how you manage to do it all. Congrats on everything you do, all your work, including this paper, and welcome back to the podcast.

Hi, Chris. Thanks so much. I really appreciate that very kind introduction, and I'm excited to have the opportunity to discuss this article with you.

Mary, we've talked about your own practice and background on previous podcasts, and those familiar with you are aware of your particular research and practice interests in gender differences in sports medicine. What was the impetus for this particular systematic review on OCD lesions rather than say ACL tears or any other topic?

Yeah, no, that's a really good question. So there's a lot published on the ACL as we're well aware, with regards to treatment options, outcomes, and certainly quite a bit on gender related differences between ACL tears and the impact on outcomes. So for this study, we actually elected to focus on knee OCD lesions, largely because it's not as commonly discussed. And although as sports medicine surgeons, we actually, we all see this. I mean it's not super common, but we do see it. And we wanted to have a better understanding of the influence of patient gender on outcomes.

Yeah, that's great. I mean, a lot of people study what they do, and that ends up leading to a lot of publications on a lot of popular topics, but kudos to you and your team for looking into something that isn't studied that often. So before we dive into the specifics of this particular review article, can you give our listeners some background on the topic itself by discussing osteochondritis dissecans lesions, and their pathophysiology, the impact on the adolescent athlete, and any gender differences with respect to things like epidemiology or any treatment considerations?
Yeah, absolutely. So the incidence of OCD in the general population is actually estimated to be somewhere between 15 and 30 cases per a hundred thousand persons. So although it's rare, it's actually really recognized as an important cause of joint pain in active adolescents. And about 70% of these lesions occur on the posterior lateral aspect of the medial femoral condyle. So OCD, it's primarily seen in adolescents and young adults, really between the ages of 10 and 20. It's twice as common in males than females. And the pathophysiology is thought to be due to focal subchondral bone damage that causes cartilage to become unstable or ultimately detached from the underlying bone and blood supply. And there are several different proposed etiologies including traumatic, ischemic, hereditary and idiopathic, but really it's very likely a multifactorial etiology. And to be honest, overall, the etiology of OCD lesions is quite poorly understood.

So OCD lesions in young patients are most likely related to some sort of traumatic incident, because these kids are very active and they're involved in sports. But also, repetitive knee injuries and excessive stress on the joint can absolutely contribute to the development of OCD lesions. And then when we talk about risk factors, there are many risk factors that influence, and can lead to poor outcomes, including age, race, lesion size, associated knee pathology. But there's actually the lack of data on the differences in clinical and functional outcomes following the treatment of knee OCD lesions between males and females. So the relative risk of an OCD lesion of the knee in a male is twice that of a female. And despite the appearance difference in the prevalence of knee OCD lesions between males and females, it's really unclear if patient sex independently influences outcomes after treatment. So really currently, treatment options utilized for male and female patients are the same.

Dr Chris Tucker:
That's interesting. I enjoyed your systematic review particularly because this is one of those conditions, like you said, happens enough that I see it in my practice. Often enough that I feel familiar and I kind of know what I'm getting at, but it happens infrequently enough where every time I see it, I end up pulling something to reread, re-familiarize, make sure I'm hitting the nail on the head with my counseling and such to the family and the patient. So that was a fantastic review. Thank you. And the article in general was great for all of us to be able to pull when we see these people. So what does management of the patient with a suspected OCD lesion of the knee look like, from evaluation through treatment? We do speak a lot about non-operative management. What does that exactly look like? And then what are your indications for surgery?

Dr Mary Mulcahey:
Right. So initial evaluation of these patients, much like any patient that we see, really involves very thorough history and physical exam. Patients with OCDs of the knee actually often present with symptoms of pain and stiffness, so kind of vague. They may have knee swelling and possible feelings of knee giving away, locking or catching, although these latter symptoms like mechanical symptoms, really don't occur unless the fragment is unstable. We always obtain plain radiographs initially, and that can be used to help diagnose OCD lesions. However, it's really difficult to determine the stability of the lesion based on x-ray alone. So oftentimes if we see any indication or have a suspicion for an OCD, we're ordering an MRI to evaluate the location, the size, the status of the subchondral bone and the cartilage, and the overall stability of the lesion i.e., looking for signal intensity and fluid around the fragment, and the presence of any loose bodies.

Now, treatment of these knee OCD lesions depends on several things including the location, the stability of that fragment and skeletal maturity of the patient, which is really important. Fortunately, most skeletally immature patients with stable lesions can be treated with activity restrictions, so non-
operatively. We may also consider bracing or some type of assistive device depending on the degree of the patient's pain, their compliance, and maybe even the patient's size. Larger patients are certainly putting a lot more weight and force through the knee, so we may have to restrict them a little bit more. But really the goal with this is to kind of take them back one level of activity. If they just have pain with running, cut them back to walking or some less intense exercise.

And then in the situation where conservative treatment fails, surgical treatment is warranted. And general indications for surgery include older age i.e., patients with closed epiphysis, those with unstable lesions, the presence of loose bodies. Certainly, the detachment of the fragment that may occur during a trial period of conservative treatment. Lesions that remain symptomatic despite a period of conservative treatment, and in the case of a non-union of that fragment. And there are a lot of different surgical techniques that can be used depending on whether it's a stable fragment or unstable. And so that there are a lot of different things that are very important to take into account. But that's kind of an overview of treatment options.

Dr Chris Tucker:

Yeah, it's a great overview. Thanks. What challenges have you faced in your own practice when caring for these adolescent athletes with sports injuries? You care for a lot of these, especially in your women's sports medicine practice. What special considerations do you think about that you don't have to when you care for adults, i.e., is it always harder to manage the parents than the patients themselves? I find that at my own practice sometimes. Share with us some of your experience.

Dr Mary Mulcahey:

That can definitely be a challenge. And certainly, overall, taking care of adolescent athletes can be challenging when they have these sports injuries. Sometimes it's difficult for them to understand the real importance of adhering to different components of the treatment plan, like wearing a brace, or participating in physical therapy or certain weightbearing restrictions. And oftentimes, we have to also take into account sort of the mental side of this too, right? Young athletes are often devastated when they suffer an injury which removes them from playing for any period of time.

And so along those lines, I really do everything I can to encourage them to be involved to whatever extent possible. Even just going, being present, watching the practice, running through plays in their mind, doing drills or whatnot in place, watching videos, but just being present, being mentally engaged and demonstrating their continued commitment to their coach and teammates. And I think that, that's really valuable, and helps them get through this otherwise difficult period.

And with regards to the parents, yeah, I think sometimes it can be more difficult to manage parents than patients. But usually when we have kind of a collective detailed discussion about the injury, the treatment plan, goals, and then the overall projected timeline for return to play, and everyone is on the same page, we all get equally committed to sort following through with that mutually developed plan.

Dr Chris Tucker:

Yeah, agreed. That's great advice. I think I found that more holistic approach and getting buy-in is really critical. So buy-in by the patient. And the younger they are sometimes, the more it helps to get more buy-in from the parents who ultimately are going to be helping with that compliance factor that you referenced. Okay. So after laying down that nice foundation for us with care of the athlete and the adolescent athlete in particular. In general, can you describe for us this systematic review specifically, and what were your key findings?
Dr Mary Mulcahey:

Yeah, so the overall purpose of our study here was to evaluate the impact of patient sex on outcomes after treatment of osteochondritis dissecans lesions of the knee through a systematic review of current evidence. So we conducted this based on PRISMA guidelines, and we searched several databases from 2000 up to October 2020, which is when we collected this data. We identified 10 studies with a total of about 691 males and 260 females. Their mean age ranged from about 11 to 34 years. And the followup ranged from six months to 16 years. In four different studies that reported functional outcomes, we found no significant difference between males and females in any of the metrics assessed.

There were seven studies specifically that looked at clinical outcomes after the treatment of knee OCD lesions. One of them found that males were more likely to have a successful non-op outcome than females. And another study found that males had a lower risk of developing symptomatic knee pain following operative or non-op treatment at a mean 14-year followup. And the remaining five studies reported statistically comparable clinical outcomes between males and females. So based on that, we found mostly comparable clinical and functional outcomes between males and females following treatment of knee OCD lesions.

Dr Chris Tucker:

That's interesting, especially since we're not entirely sure what the etiology of these lesions is. It's interesting to me that males have it occur twice as often, but yet when it does occur, no matter how you treat them, they seem to do the same. That's what you found.

Dr Mary Mulcahey:

I know. It's interesting.

Dr Chris Tucker:

So with your review concluding that patient sex is not a significant predictor of outcomes, what are we left with as reliable prognostic indicators to help guide our treatment decisions and counseling of patients and their families?

Dr Mary Mulcahey:

I think that's critical, and that's what we as sports medicine surgeons, we need something to refer to when we're having these discussions with patients, as you and I were kind of discussing earlier. So there are definitely some prognostic indicators that we can kind of hang our hat on. One very important is age, right? Skeletally immature patients do better. There's a much higher chance of healing with non-operative management in those patients. When we have larger defects and those that are unstable, those much more often require surgery. So keep that in mind when you're seeing those patients, you may move towards surgery sooner rather than later.

Location of the lesion is also really important. So we know most commonly it's on the medial femoral condyle, but OCD lesions on the lateral femoral condyle or patellar have a lower rate of recovery than those on the medial femoral condyle. So keep that in mind too. And then there are some racial, and in BMI indicated implications too. So African Americans have a slightly poor outcome, and patients with a high BMI. So all things to take into account when we're educating our patients and their parents.

Dr Chris Tucker:
Yeah, those are great. Like you said, we like to hang our hat on some data to counsel patients accordingly, and you outline very nicely what there is evidence to support. So with that in mind, I know this isn't the most commonly studied topic, and you have reviewed the currently available evidence nicely. Leaving you with hopefully more questions than answers. That's what most people say good research does. So that being said, what do you think is currently the most important unanswered question with respect to this issue of gender differences in management of OCD lesions or any other condition of the knee, or what do you see as the most important next step for advancement in the field?

Dr Mary Mulcahey:
Yeah, it's fantastic, and you're right. I think anytime I'm working on projects, I end up leaving with a lot of questions. And when I read articles, too, that generates a lot of questions. So certainly there are many questions that remain with regards to OCD lesions of the knee. One of the most important I think, and what we've been talking about this whole time is, why do... It's the sort of gender implications. But specifically, why do OCD lesions tend to occur more often in males than females? We don't understand that. So I think it would be interesting to dig deeper into that, and then also try and understand what may be the best fixation method. We didn't discuss that in detail, but there's a lot of different options or different techniques used, and I don't think we know what the best is, right? Some drilling for a stable lesion, fixing the fragment with metal screws or titanium screws, or biocomposite type screws, but what's really the best? So I think certainly there's some work that we can still do in that regard.

Dr Chris Tucker:
All right, fantastic review, Mary. Any other closing remarks before we close out the podcast?

Dr Mary Mulcahey:
Yeah, absolutely. So I mean, we've said there are still many remaining questions, but fortunately there are groups and big groups doing research on this very specific topic. So excellent research is being done by the ROCK Group, which is Research on Osteochondritis Dissecans of the Knee, which will hopefully help us answer some of these remaining questions. So I'd encourage all listeners to stay tuned, read some of these articles that have already been published by ROCK and other groups to get some additional background information.

Dr Chris Tucker:
Mary, I wanted to congratulate you again on this work, and thank you for sharing your time and your thoughts with us.

Dr Mary Mulcahey:
Great. Chris, thank you so much. I've really enjoyed this conversation. And huge congratulations to you on the success of the Arthroscopy Podcast, and I look forward to many more wonderful episodes.

Dr Chris Tucker:
Well, thanks. I appreciate you being a part of it, and contributing to our ongoing efforts here to bring the good word of the Arthroscopy Journal family out to our listeners. Dr. Mulcahey's article titled, Males and Females Exhibit Comparable Outcomes Following Treatment of Osteochondritis Dissecans Lesions of the Knee: A Systematic Review, is currently available in the October 2022 issue of the Arthroscopy Journal, which is available online at www.arthroscopyjournal.org. This concludes this edition of the Arthroscopy Journal Podcast. The views expressed in this podcast do not necessarily represent the views of the
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