

**BANKART REPAIR TO CORRECT SHOULDER INSTABILITY
AKRON CHILDREN'S HOSPITAL
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NARRATOR: Welcome to Akron Children's Hospital. Over the next hour you'll see a Bankart repair to correct shoulder instability. Bankart lesions occur when shoulder ligaments tear away from the bone. During the webcast, you'll learn how doctors reattach the ligaments arthroscopically through three small incisions. You'll also hear from a patient who has undergone the surgery, and meet orthopedic surgeon Kerwyn Jones. Doctor Jones is performing the leading edge arthroscopic procedure that is designed to help a child quickly resume his or her busy lifestyle. ORlive makes it easy for you to learn more. Just click on the "Request Information" button on your webcast screen and open the door to informed medical care. Now, let's go to the moderator of our program.

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TODD RITZMAN, MD: Good evening. And welcome to Akron Children's Hospital live webcast featuring an arthroscopic repair of an unstable dislocating shoulder. The procedure we'll be highlighting tonight is performed by Dr. Kerwyn Jones and it's called an Arthroscopic Bankart Repair. I think we really have something unique to offer here to Akron Children's in that under one roof for in our Center for Orthopedics and Sports Medicine we can offer a comprehensive care for athletic and sports related injuries. We have four fellowship trained pediatric primary care sports medicine doctors and five fellowship trained pediatric orthopedic surgeons. In addition, we have a full physical therapy service on site.

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To highlight that today, I'd like to introduce my colleagues. Dr. Kerwyn Jones, who is one of a handful of pediatric orthopedic surgeons with advanced subspecialty certification in orthopedics sports medicine. And Dr. Joe Congeni, who's the Director of our sports medicine center, who also has advanced subspecialty certification in primary care sports medicine. Welcome tonight, guys.

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KERWYN JONES, MD: Thanks Todd.

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TODD RITZMAN, MD: Before we go on, I'd just like to talk a little bit about the format. And we're really like this to be as interactive as possible. I think it would make it more interesting for us, more interesting for you that are watching online with us tonight, and help us to make things more relevant. So we'd like to encourage you to hit your MDirectAccess button on the webpage there and give us questions anytime throughout the procedure...throughout the discussion here and we'll try to address those for you.

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I think to kind of introduce things, Joe, we'd like to start first with who the patient is and what they're like that present with shoulder instability, and kind of how we first approach that.

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JOE CONGENI, MD: Yeah. The shoulder's a really unique joint. And so in sports it's a joint that comes under a lot of load and stress to it and is injured not infrequently. The way the joint is made, it's kind of a...you know, we call it a ball and socket joint, but it's really more like a ball sitting on a golf tee. And so a ball sitting on a golf tee. It has a lot of motion. When you think about the shoulder joint, very unique because it has the most motion of any joint in the body. So, much more so than, for instance, the knee, the ankle or the joints. So it has a lot of play in it. And what holds that ball on the golf tee is a ligament capsule that surrounds the ball on the golf tee. And there's a shock absorber between the ball and the golf tee.

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And so during sports, particularly overhead sports like serving a tennis ball, you know, serving a volley ball, throwing a baseball, the shoulder comes under different stresses. And in those activities the ligament capsule, the capsule can be stretched and allow a lot of play of the ball on the golf tee.

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In other types of injuries, higher load injuries, like somebody for instance in football tackling somebody where the arm is forced into an awkward position, or somebody diving for a ball in the outfield, a softball player, the ball sometimes pops all the way off the golf tee, and that's called dislocated. And in a dislocated shoulder, often there's a tear of the ligament that's supposed to hold the ball on the golf tee. And often there's a tear of the cartilage pad between the ball and the golf tee.

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So, one of the big things for us in sports medicine is trying to differentiate is this thing stretched out all around the ball on the golf tee, or is it actually torn. And when it's torn, it can be very difficult to help get better and to rehabilitate and sometimes even need surgery.

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TODD RITZMAN, MD: Sure.

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KERWYN JONES, MD: I think, Joe, for the patients and the people who are sitting at home right now watching it's difficult for them to understand. We've seen it, but really what we're talking about is there's this cup with that cartilage rim around it.

JOE CONGENI, MD: Um hmm

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KERWYN JONES, MD: And it's the stability, as you said, is the combination of the cartilage rim as well as the capsule around the joint and the ligaments that are within that capsule.

JOE CONGENI, MD: Um hmm.

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KERWYN JONES, MD: It's a tough concept to understand, but I like your golf ball and tee analogy.

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TODD RITZMAN, MD: Sure. Kerwyn, when we see patients that have unstable shoulders, or shoulders that dislocate, and those that have instability in several directions from overhead activities versus those that have a specific traumatic event – a football player that has an injury

and dislocates its shoulder – how do you approach those two as far as treatment recommendations and your expectations for success of treatment recommendations?

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KERWYN JONES, MD: Yeah. Well, really, you know, a lot of that information can be gained from the history. When you talk to the patients, as Joe mentioned, if he came in and said, I was hit playing football and my arm in this risky position, it popped out, somebody had to pull it back in place. That tells me that most likely this is a kid who has that traumatic injury that you talked about, where the ligament and the...the cartilage may have been torn off of the sockets. Different than, say, the young girl who says, you know, over time my shoulder just starts to feel loose and sloppy. I never really injured it, but it's starting to pop out of place now. And those are the two different types that he was talking about.

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So for the girl, or the boy for that matter, that has the type where it wasn't forced out of place by a collision sport such as football, the one where it just slowly starts to develop over time, that kid needs extensive physical therapy, because most of the kids that have that are going to get better with physical therapy alone and very few are going to need surgery. It's different for the kid who comes in with a traumatic injury where the shoulder pops out of place from an injury. Oftentimes those kids may fail physical therapy and end up requiring surgery.

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TODD RITZMAN, MD: Sure. So big picture, we know that the patient with the traumatic injury, that had a dislocation that has to be popped back in, has a much higher likelihood of having recurrent instability, or the shoulder dislocating again with other activities. Nonetheless, we always approach these patients first with physical therapy and rehab. So, Joe, maybe if you could comment a little bit about that.

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JOE CONGENI, MD: Yeah. I mean, even the first step is a lot of these kids in the first few days, particularly with the tear, the dislocation injury, they have a real loss of motion. They have a lot of pain. So early on, of course, you treat them...sometimes they're in a sling, sometimes... it usually will be through a period of ice and relative rest. And as they gradually get their motion back, we work early on in just getting their motion back and their function back in the shoulder to some extent. But, one of things is a lot of these kids can get the false sense the shoulder's perfectly fine and return too soon. So, they're held out for some period of time to get just basic motion back.

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And then the next step of treatment, the key step of treatment, from our standpoint, is to rehabilitate, to strengthen the shoulder. And the real key part of where the strength of the shoulder comes in is a group of muscles behind the shoulder. That group of muscles is known as the scapular stabilizers, and we spend a lot of time working very hard to get those shoulder muscles strong so that when that shoulder is in that at risk position...The shoulder's pretty darn stable down here and it's okay here. But when you get up into that overhead position and that shoulder's not stable any more, that's where if we get good strength in there that can give good support to the shoulder, they may get back to stabilizing the shoulder. So we spend weeks of time trying to get that shoulder stronger; often four, six, eight weeks of a strengthening program for those muscles behind the shoulder to support the shoulder. So rehab is the key.

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Now depending on what sport they play, in certain sports you can actually give them a brace, or what we know as a harness that they can wear. And I brought up a...kind of a one type of a harness here. This is a pretty restrictive harness that athletes wear. And you can see that it wraps around the shoulder and it holds the shoulder from going up too far into that risky position, or too far back into the position, where they are in hockey checked into the board, or trying to make a tackle in football, or diving for ball, again, in softball. So a harness type brace may, along with a strengthening program, help to try to keep that ball back on the golf tee. That's' the real goal of therapy. Get them back to sport and keep the ball on the golf tee.

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TODD RITZMAN, MD: Sure. Thanks. So for the patient that has failed therapy, has demonstrated instability or dislocations that are recurrent, happen again and again, and we go on to talk about recommendations for surgery, Kerwyn, what....what typically do you recommend in that way as far as approach to surgery.

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KERWYN JONES, MD: Well, there's two real options. One is to do the surgery through the traditional, what's considered the gold standard open technique. And this means that the patient has an incision over the front of their shoulder, right there, that measures about five inches in length. Open up the joint. You find that torn ligament, was well as the torn capsule, and you sew it back together in a tightened position. The other option is to do it through what's called an arthroscope, which is nothing more than a tiny telescopic type device that utilizes tiny one quarter inch holes around the shoulder joint in order to tighten up that same ligament or capsule.

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TODD RITZMAN, MD: Sure. I think we'll soon go to the surgical video, but we'd first like to introduce one of the...a patient that has actually been through this from start to finish and had this procedure performed by Dr. Jones. Her name is Meagan. She's a athletic trainer...or, studying to be an athletic trainer at Mount Union College. And we have some video of her experience here that we'll show now.

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MEAGAN: I actually fell and put my arm out to stop myself, which is one of the worst things you can actually do is to catch yourself like that. And that's what tore my labrum. I couldn't brush my hair or blow dry my hair, so I kind of avoided that motion at all. So I would...this motion, couldn't do it. It would pop out and back in, and didn't feel too good. So, there's a... like a month where I would just wear my hair up wet and so I didn't have to do that.

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TODD RITZMAN, MD: Sure. So pretty typical history of what we hear in a patient that has disability from an unstable shoulder. And I think we'll start moving towards the surgical footage here. Kerwyn, you'll walk us through this. And, I think we'll show this first feature and let you orient us and show...and go from there.

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KERWYN JONES, MD: Sure. Well, what we're seeing in this first feature is we're seeing a fifteen year old boy who had multiple dislocations of his left shoulder. The first one was a traumatic event that he had playing football. And, we're going to walk into the OR here shortly and you'll see a shoulder, that's basically his left shoulder facing up towards the ceiling. So the patient's lying down on his right side inside the operating room. And, if you look here at the screen, you'll see that this is actually his shoulder, right here. This would be the upper part of his arm and my hand pushing on the shoulder. We have his arm, actually, eventually suspended in

traction for the arthroscopic part of the procedure, but this is what's called the exam under anesthesia, which tells me which direction his shoulder is actually popping in or popping out.

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So you'll see here as I push with my arm...and you can go ahead and roll that. As I push forward, you'll see the shoulder popping out of the joint forward. Right there. And then you'll see it popping back in. There it's out. There it's in. There it's out. There's it in. And you could see why this would cause this patient a lot of...a lot of pain and a lot of difficulty. Now, he doesn't pop out that easily when he's awake, because right now his muscles are all relaxed. When he's awake, his muscles can fight that to some degree. I think we'll stop right here before we transition into the inside portion of the surgery.

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What's done in arthroscopic surgery is we use devices that are little tiny cameras and they work almost like the periscope that you might have used when you were a kid. If you were trying to spy on your little brother, you could look around the corner with this angled device.

Arthroscopes work the same way. They come in these thirty degree and seventy degree cameras that allow us look around tiny corners inside of a tight joint like the shoulder. And we constantly flow fluid through the shoulder joint in order to, one, clean it out, but also just to keep it distended and allow us to see a little bit easier.

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What you'll notice here is that everything is magnified. So keep that in mind as you're watching the video. So go ahead and roll the video. And the first thing you'll see is on the top of the screen there there's a large white ball, and that's the top of the arm bone. And that stringy structure there is the biceps tendon. That's the beginning of the biceps muscle in the front of your arm. That's the tube that the camera goes through. And shortly we're gonna move up and look at, I believe, one of the rotator cuff muscles, called the super spinatus where it attaches. Right where the bubbles are there is the undersurface of the tendon of one of the rotator cuff muscles that attaches to the arm bone there. His is not torn. And it's unusual seeing a torn...to see a torn rotator cuff on a kid.

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Now we're moving into the space between that ball and cup that Joe so...described so well earlier. The top of the screen is the ball and the bottom of the screen is the cup, or the socket; what we commonly call the glenoid socket for the shoulder. There's a wide space in this boy's shoulder, which is partially due to the fact that not only has the cartilage been torn as you see there, the ends of the cartilage that are torn, but also the wide spaces due to the fact that the ligaments have also been stretched or torn out of place. The back of the cartilage right here, you'll see is that bumper type rim that's right in front of the camera there. And we want to achieve that same bumper type of rim of cartilage in the front of the socket there. So that will be our goal with this surgery is to achieve a bumper of cartilage, as well as to tighten up the ligaments that have been stretched out over time.

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One of the reason that in the past arthroscopic surgery may not have been as successful is because people failed to recognize that part of the problem is you need to also tighten up the ligaments, which is what we now do. And you'll see here what we're trying to do is establish other holes in the shoulder to actually work through. So there are two of what we call plastic cannulas that actually go into the shoulder and easily pass instruments in and out of the shoulder to work with. And I think that's probably a good place to stop right there.

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TODD RITZMAN, MD: So I think maybe related to the approach, Kerwyn, if you could comment on what we're able to achieve through the scope now, through three small portals. And not only achieve, but to see through the scope, compared to what we typically saw in the past with the large open exposure.

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KERWYN JONES, MD: Yeah. You know, if you look at this historically, Todd, in the past the gold standard was always to do it open. And there's still nothing wrong with doing the surgery through an open procedure. But I really feel that we can achieve the same success using it through the arthroscope and with less pain for the kid and with less of a scar for the kid. And also, they may recover a little bit quicker. I wouldn't say that we allow them to get back to sports any quicker, but they feel better a little bit quicker and get back to some of their normal activities of daily living. With the open procedure, we used to open up the shoulder joint, tighten up that ligament, as I said. Now with this type of procedure, we can accomplish the same goal through tinier incisions.

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TODD RITZMAN, MD: Great. Do you want to roll some more footage of the surgery.

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KERWYN JONES, MD: Yeah, let's look at some more. So what you see here is a hook, which is actually a probe that we use to feel and pull things with in the shoulder. And what it's looped over there is the torn cartilage on the front of the socket of the shoulder joint. Up above is that biceps tendon, or the origin of the biceps, and you can see how loose that is near the biceps there. And it continues on down over the front of the shoulder in an area where it's typical for the labral tear. This is the top of the shoulder. We're gonna move down to the front of the shoulder. And you can see it's torn all the way down to the bottom of that socket right there. That loose stuff is the actual cartilage. I think this is probably a good place to pause here.

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What we're doing here is we're showing the outside of the shoulder joint. And, in the outside of the shoulder joints we have several different plastic cannulas that we used, as I mentioned, to work through. So the back of the shoulder joint has the camera. That's what we're seeing on the screen right here. The front of the shoulder joint, up near the top, is where the two plastic cannulas are. And you can see my right hand is working with a tool right there. And as you'll see, there's constantly water being pushed through the shoulder joint. Most of it stays in or is suctioned out through a suction device. But some of it actually does come out through that little cannula there. And I think that we could roll that there and take a look at what we're doing here.

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So here is simply working with one of those instruments through one of those cannulas. You can see my assistant here is pulling up on the arm to try and allow some room to work safely within that tight shoulder joint. And again, as I mentioned before Todd, we actually have his hand suspended in some traction that pulls on the arm. And you can see, I can look up at the screen and tell what's happening inside of the shoulder joint with quite good visual acuity. We can really tell with great detail what's going on. And there's the traction that you can see. This is the boy's arm being pulled with weights over a pulley right there.

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TODD RITZMAN, MD: Maybe if we could pause real quick there. We have a good question that came in online that is, I think, appropriate timing-wise for what we're going to see next,

Kerwyn. This is from Mike and he asks if during an arthroscopic plication approach, do you anchor into the labrum with redundant capsule or a suture anchor? And which do you feel is stronger? I think this is a good time as we're about ready to get to that step.

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KERWYN JONES, MD: Well, actually, the suture anchor has been shown to be just as strong as anchoring actually into the labrum. So we pass the suture through some of the capsule, which includes that ligament. We pass it through some of the labrum, which is the cartilage that he's mentioning there. And then use a suture anchor, which is...as you will see further on in the video, is more or less of a rivet that will hold snugly inside the bone to keep those sutures from pulling out. Sutures are actually attached to that suture anchor.

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TODD RITZMAN, MD: So it provides our ability to anchor, or connect the soft tissues, the redundant or stretched out capsule, the torn cartilage, or labrum, to the bone and provide healing.

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KERWYN JONES, MD: That's right.

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TODD RITZMAN, MD: Yeah. I think we should continue rolling this.

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KERWYN JONES, MD: So as you mentioned, as we look at more of the video here, our goal is to get that cartilage and that ligament pulled back up to its normal position. So, this device here is more or less of a spatula with a slightly sharp edge. It's used to pull back some of the scar tissue that's formed in the front of the socket there. The cartilage is sitting down over the front of the socket and we want to be able to mobilize it, or pull it back up onto the rim of the socket. And just over a short period of time of even weeks, fibrous scar tissue forms and holds that cartilage down there. So we've now freed it up.

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This device is more or less like an electric razor that you may use at home. It has the ability for the blades to turn back and forth with inside this little sheath and it will cut soft tissue. And if you use it with a high enough speed, it can even cut bone with inside...within the side of the... inside of the shoulder joint. So you can see it's being placed in there. We put a little suction on it, which allows us to pull the tissues that we want to cut into the suction device and to cut them off. And now I think it's going to transition into the inside of the shoulder. And you can see we're going to gently clean back some of the excess cartilage there. Try to get a nice smooth edge that we can pass a stitch through. Something that can heal back to the bone. So there it's cleaning up some of the cartilage.

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And in a moment here you'll see that we've pushed that device over the edge of the socket into the bone area and we're now trying to clean up some of the bone. Actually, you have to generate a little bit of bleeding with inside the shoulder joint. By intentionally generating bleeding, we can help that soft tissue, the cartilage in the ligament, to heal back to the bone. So that's the purpose right here. And you can even see a little bit of blood extravasating from the capsule on that view there.

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Now, this little device here is a grasper that's used to grasp onto soft tissue. In this case it's the cartilage, that labrum, that we're pulling back up onto the socket. I want to see here, did I

mobilize it well enough to get it back into its normal position. And I would like to pull as much as I can up into that position.

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This is a sharp device that's used to pass a wire down through the soft tissue. And after we pass the wire, the wire will then be exchanged for the actual suture, or the stitch. So there's the wire. Just showing how it can come out of the end of that sharp device. You can see the device is actually hooked. It allows us to get around sharp corners and to pass a stitch. Here's the device actually inside the shoulder. And, this is the first stitch as it's being passed. So we take that device and we pass it through that capsule, that redundant loose looking tissue there that's been stretched out. We pass it through the capsule, and oftentimes also through the cartilage. In this case, as you're going to see, I'm just going to pass it through the capsule, because in this case the cartilage isn't torn down there and we're just trying to tighten up or shift some of that capsule up towards the patient's head. So we're pulling it from the bottom of the shoulder socket up to the top of the shoulder socket trying to tighten it up.

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And now you'll see the wire coming out as we push it through that sharp device. Once the wire is inside the joint, we now have to retrieve it and actually pull that wire out of that joint. So that grasper that you saw previously will come back into the joint. We grab that wire and pull it out through one of those plastic cannulas outside the joint. Once it's outside the joint, you notice that that wire had a loop on it. And that loop is used to pass the stitch through the loop so that we can then shuttle that stitch back into the joint. So here you can see the wire coming out of the joint. And now you'll see a stitch going back into the joint. So the wire was passed out and then it was passed back in. The stitch follows it. That's the suture...or, I should say the suture follows it. And now we have a stitch through that soft tissue.

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Now the problem is the two end of the suture are in different cannulas. You can see one is going in that bottom one and one is in the top, so we've got to get them into the same cannula. Here's a demonstration of how we shuttle that suture with the wire down into the joint. You can see the suture disappearing. The wire now comes out. There's the other end of the suture. Now we've got to get them both into that same cannula. Both into the same plastic tube. We pass the grasper down through one of the cannulas. We'll choose which one we want to pull both suture limbs through. And, there, both of them are now outside of the same cannula.

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This device is a drill. Not much different than a drill that you might use at home, except that it's sterile, and hopefully a little shaper. And that gold handled thing is a soft tissue protective device that keeps us from drilling tissues around the shoulder joint that we don't want to be drilled. So the drill is essentially focused just in the area that we want to cut into. It won't damage anything in the surrounding tissue. That too is passed through one of those cannulas. And now you'll see inside of the joint the drill actually going down to the edge of the socket. And we're going to pick an area on the edge of the socket that I feel is just above where the stitch. Because, remember, our goal here Todd, is to pull that soft tissue up towards the patient's head and in so doing to tighten it. So I want my drill hole to be a little bit above where the actual stitch is placed. There's the drill going in there. Those little fragments will be sucked out through the suction device. You can see a tiny hole.

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This is the actual implant. What you're...what Mike asked about earlier, that brown thing with the ribbing on it is what will remain in the shoulder. The rest of the device, including the metal and the plastic tip there will come out. The brown part will stay in and actually go into the bone and hold the stitch into the bone. That brown part is actually bioabsorbable, which is a fancy word that means that it will dissolve in the patient's body over time. Some people would use metal suture anchors, which work just as well.

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Here goes the device into the shoulder. You can see that the suture was passed through the tip of it. That allows us to pull the suture down and tighten it up. And we literally pound that device back into the hole that we previously made, so that the suture anchor is now placed. Here is the inside view of that. That's the tip of that brown device that I showed you. That part all will come out. The suture is passed through it but, again, it will come out and the only thing that will be left is you're going to see coming in here now, is that bioabsorbable implant. The actual tack-like device. The suture anchor that's going to sit in his bone until it absorbs over time.

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And you can see that as we pound that thing in here, it tightens up the shoulder capsule. You can see where that stitch is in the...at the nine o'clock position; it's pulling all that soft tissue up near the rim of the socket, and that's what we hoped to accomplish there. So that's one of approximately three stitches that are actually going to go into this boy's shoulder.

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This is nothing more than a fancy arthroscopic scissor which cuts off the excess stitch so that it's not sticking out within the joint. This is another view of the same thing. That's the implant going back into place. And I'll often pull on the implant at this point to make sure...As you can see there I'm pulling on it. To make sure that it's snugly attached inside that socket that we drilled earlier, so that it doesn't pull out on the patient. That's probably a good place to stop that one there.

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TODD RITZMAN, MD: Sure. And I think it's evident that you're able to achieve a lot, again, through very, very small approach, minimally invasive, not taking a lot of muscle down that would have been required previously. I think it's another time for...a good a time for another question that came in. And the question that was posed, is how do you know how to tension this? How do you tension it? How do you make it tight enough, and if you make it too tight?

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KERWYN JONES, MD: Yeah, that's a real tough question to answer. Part of it is you just learn over time. And, actually, if you look at historical results, it's a lot easier to over-tighten the shoulder capsule with an open procedure than it is with the arthroscopic procedure. I think Joe, you've probably had some experience with that over the years.

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JOE CONGENI, MD: Yeah. I guess I've been around a while, and in twenty years of sports medicine in the old...you know, it was a great advance. But when we went to the tightening surgery and did the open procedure, we'd end up with...a lot more frequently with a stiff shoulder. And a stiff shoulder for an athlete isn't exactly a great thing. So, I mean, for perhaps some other things you do in life a stiff shoulder isn't so bad. But when we went through the muscle, previously, I think we ran into that post-op more frequently and it was difficult for sport. And so just like everything else, what a great advance it's been since the arthroscopic age to see when we get these kids back they're a lot readier to play sports.

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KERWYN JONES, MD: Yeah, I agree.

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TODD RITZMAN, MD: Sure. Want to continue with the footage?

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KERWYN JONES, MD: Yeah. So we can roll from here. So we've now placed one of the sutures. And as I said, we have to place three of these, if possible. And it may not seem like much, but you have to remember everything is magnified quite a bit here, so it's a very tight space. And even getting three sutures in there is a...is a good accomplishment and hopefully will be the end result of this kid's surgery. So that's, again, a picture of us cutting that suture off there.

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And then we're going to take a look around and see what we've accomplished so far. So you can see that the frayed labrum, the cartilage at the top is still present. The labrum is sitting over the edge there. We're going to have to pull that back up into visualization. You can see that at the top of the socket, at the three o'clock position on your camera, there's still a lot of space there we've got to tighten up. At the nine o'clock position it's pretty well tightened up there. That's what we wanted to accomplish. You can see that space that was previously present in the bottom of the socket is now gone. I can no...I cannot any longer drive my camera into that empty space down there. It's tightened up the capsule, it's tightened up the ligaments.

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I believe in a moment we're going to see a probe coming in here...and there it is. And the goal of the probe is to really check and make certain this is a good stitch. This is probably the most important stitch of the three that we'll place, because this is where the major ligament in the shoulder is. That bottom portion of the capsule, the bottom portion of the socket is where the major ligament is for most of these traumatic injuries, so we want that to be real snug. So I pulled on it, convinced myself that I'm happy with it and if we weren't, we'd redo it.

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Now, we're about to pass the second stitch, and it's done in the same way. You can see that... what's called the suture lasso, the sharp device passing through the capsule. Then coming underneath that cartilage rim that's around the socket that we call the labrum. It's a tight space so it's tough to maneuver some of these instruments into the proper position. I wasn't happy with the first pass, so we took a second pass. You'll see the pointy edge coming out there. I like that one a lot better. So now we're going to scoop underneath that cartilage and try to pull it all up as one big continuous block of tissue. There comes that wire into the joint, which is used simply to exchange for a stitch. So we're going to pull the wire out through one of the cannulas again. Pass a stitch through the looped end of the wire. And the stitch is shuttled back into the joint by use of the wire.

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So you'll see there I'm pulling on it to make sure that I have what I feel is an appropriate bite of tissue. If it pulled through that tissue, I'd know that it wasn't enough. So there's the wire being exchanged for the suture again. You'll see it coming down there in a second. And there's the suture. The one end is going up through one cannula. The other in the other cannula. And we have to get them both into the same cannula.

00:31:18

Now some people would do this with what's called a standard knot tying anchor. This is actually a knotless suture anchor. Knotless suture anchor means that we don't have to actually tie knots to tighten tissue down. The suture anchor that you say actually does the tightening for us. It's been shown recently to work just as well as the ones where knots are actually tied. Here comes that suture anchor. You can see I can control how tight it is by, number one, where I place my drill hole. Number two, how tight I hold that stitch. That stitch is passing through that implant outside of the patient's shoulder. If I pull tight on it, it's going to pull that...Like that there, you can see the tissue being pulled in. If I let go, that tissue would fall back into its previous position. So I'm holding in what I feel is appropriately tight. And we're going to pound the implant down in place.

00:32:09

Once the implant is in place, we can cut the suture and check that stitch and make sure we're happy with it. There's the implant being pounded down. And, again, we're going to pull on it and make sure that it's a good press fit into that hole that we drilled.

00:32:28

And now here's the finished product. We're pulling on the biceps tendon. You can see one stitch at the top of the socket right there. And then you're going to see the other two stitches near the bottom of the stitch...of the socket down there. And you can see that the space has been closed up. We've pulled everything back into place with those three stitches.

00:32:56

TODD RITZMAN, MD: Great. So, again, I think I keep reiterating the same point, but it's evident that you have achieved the goal...surgical goals of repairing the torn cartilage, or labrum, and simultaneously imbricating, or tightening, or like adding a pleat to a pants, tightening that redundant stretched out capsule through three small stab incisions. Not taking down any muscles in front of the shoulder, and I think yielding less pain for the patient post-op, potentially less scar and less tightness, as you referred to Joe, and a good result. I want to answer...ask a...address a couple of other questions that have come in online, if we can. The first I think, Joe, it might be appropriate for you to address. This is from Jayce. By strengthening the rotator cuff muscles can this lead to shoulder ligaments that were loose to self-tighten? So, can therapy...can strengthening the cuff help some of this issue?

00:33:47

JOE CONGENI, MD: You know, that's a good question we're asked a lot. You can't...I don't want to leave the false impression that you can tighten ligaments. But, actually, the rotator cuff is one in the group of muscles that we strengthened that give the shoulder support. So, really, the muscles are giving support. You're not actually strengthening or tightening up those ligaments that have been stretched out, however.

00:34:07

TODD RITZMAN, MD: Sure. Good. Soon here we're going to show another clip from our patient and her experience. And it's going to lead well into what we've had a lot of questions come online about, which is the recovery. How long it takes to recover from this surgery and what that's talking about. Or, how...what that requires from the patient as far as rehab. But, let's show our next clip, if we could please.

00:34:32

MEAGAN: At first I started doing gravity assisted exercises like Codman's which are...I laid on the table, let my arm hang off and just did circles with the gravity taking my shoulder, just to gain some of the range of motion back. I would do what's called the finger ladder and I would

use my fingers to pull my shoulder up to gain motion back. And I would do internal and external rotation with...I did it starting with just doing it on its own. Then I did it with therapy and to gain a little bit of resistance. And then I also did it with thumb bells to gain even more weight in it.

00:35:11

It was basically when I could do everyday activities without any pain, without it popping or anything. When I could lift like heavy boxes, or when I could lift even the coolers that we use when we fill them up with ice, I could lift that on my own without having to have help, I knew that it had worked and that it was the right choice.

00:35:32

Akron Children's Hospital just took really good care of me. They were interested in getting me back to normal life. I wouldn't go to anyplace different. I even took my little sister there when she broke her toe. I mean, Dr. Jones was just really interested in what was going on and how we were doing. And he even kept asking me how my shoulder was, if anything else had happened. So, he just took really good care of us.

00:35:59

TODD RITZMAN, MD: Great. A couple of other questions that have come through online. Jacob, I have not been ignoring you. This has come through twice, but I think it's...was most appropriate for now. Jacob asked, what's the total recovery time for this surgery?

00:36:11

KERWYN JONES, MD: Do you want to handle it, or do you want me to? Go ahead Joe.

00:36:13

JOE CONGENI, MD: Well, you know, I...that's the first question everybody asks in our office too. When we first make the diagnosis we sit down and we talk about, okay, now this is happening recurrently. We're starting to look at the issues of surgery. There's a lot of consideration of timing. I mean, when is it. Is the person going to be able to return to their sport? And we have to realistically look at something in the range of six to nine months before that kid's going to be able to play sport again, depending on the high load, the intensity of the sport and what it is they want to return to.

00:36:41

KERWYN JONES, MD: Yeah, I'd agree completely with that. And I think it's really important that we have that discussion with the patients ahead of time, because fifty percent of the success of the surgery comes from the patient. We don't always get a patient like Meagan. I mean, she's pretty much of a dream because she in herself is an athletic trainer and knows exactly what to do. But, it's important that they buy into the program and follow the plan. If they go back to early, especially in a collision sport, I think there's a much higher chance that they may re-dislocate and be in that ten or less percent that we all want to avoid.

00:37:12

JOE CONGENI, MD: I...Yeah. I really think that's an important point, even in our discussion, first of all before we go that far, is to see, you know, is the athlete totally committed to this. This is not a small deal. It's a big surgery.

KERWYN JONES, MD: Yeah.

00:37:23

JOE CONGENI, MD: You could see that. And so we need to make sure that it's an athlete that's realistic, that's committed. That understands like, hey, I just want to see that surgeon and they're magically going to fix me....

KERWYN JONES, MD: Right.

00:37:32

JOE CONGENI, MD: ...you know, there's got to be a lot of participation on the part of the athlete. So we really try, you know, in our visit too, to discuss that with them. And if they're not a good candidate, then we look at other choices. But if they turn out to be a good candidate, then somebody like Kerwyn can really do this patient a lot of good.

00:37:48

TODD RITZMAN, MD: Joe, I've heard you bring up a good analogy for the athlete recovering from an injury or a surgery like this in replacing their prior emphasis and excitement and approach to training for a sport now to their rehab. Maybe if you could comment on that a little more, that mindset.

00:38:06

JOE CONGENI, MD: Yeah. You know, that's kind of that now the next stage of that same talk. This talk could be an hour the first time when we go through it...

TODD RITZMAN, MD: Sure.

00:38:12

JOE CONGENI, MD: ...because it's a long discussion and we talk about, okay, now the next thing you have to face is the surgery and it's a big deal. And I ask questions about that that are more appropriately answered by Dr. Jones. But then when we take back over again, once the surgery is behind them, that's when this really becomes...you know, we allow them to kind of get some of their competitiveness and their energy into the rehabilitation and then a lot of it falls back on you and there's a lot of individual variation. You know, patients ask a lot about at what point will I be able to do this or that. There's a lot of individual variation there, depending on how hard they work at their rehab.

TODD RITZMAN, MD: Sure.

00:38:43

JOE CONGENI, MD: So it becomes kind of like that big basketball game you had, or softball game or, you know, football event, and we try to get them to use those competitive juices. But not too much, as Kerwyn said. They also have to be realistic as to not to jump back in and do things that could be dangerous to that repair.

TODD RITZMAN, MD: Right.

00:38:58

KERWYN JONES, MD: And it also depends on what they want to return to, don't you think? I mean, I may be more likely to send a kid back to a sport that's non-collision than I would the football or La Crosse or hockey. Those kids I want to wait a little bit longer.

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JOE CONGENI, MD: Um hmm.

00:39:11

TODD RITZMAN, MD: So...but in general probably a good attitude to think that their rehab is their sport for six to nine months.

JOE CONGENI, MD: Um hmm.

00:39:17

TODD RITZMAN, MD: And that will...that will typically lead them to a pretty good result.

JOE CONGENI, MD: Yeah.

00:39:20

TODD RITZMAN, MD: Another question that's come in from Tony. He says his shoulder has dislocated twice. However, he's approaching his senior season in football and he can't give up nine months. To give up nine months would make him lose his last season of football. Is there something we can offer to get him through that? Joe, you want to comment?

00:39:38

JOE CONGENI, MD: Well, we'll see. Can Tony come down here by six o'clock...and maybe we can...Actually, and that's the way my patients are. I mean, they want to know right away for the now...

KERWYN JONES, MD: Yeah.

00:39:45

...JOE CONGENI, MD: ...and we start to look at those kinds of things. But, we face this very frequently. And one of the things that I tell athletes, particularly in a sport that is a high load sport like football, like Kerwyn's talking about, is if you go into almost any high school locker room or college locker room by the mid to late part of a season, there's going to be a lot of kids that have shoulders that are loose or unstable. So we may then, you know, need to try to get them through with the use of a harness and rehab, and put off the surgery till when the season's over again. So that's the part I'm talking about, about the timing is very important, Todd.

TODD RITZMAN, MD: Sure.

00:40:16

KERWYN JONES, MD: Yeah. And I want to add to that if I can, because that's a good point to talk about the fact that this surgery is not necessary for all kids. Or even for all adults, for that matter. I can't honestly look a mom or a dad in the eye and tell her that by doing the surgery we're going to decrease the chance that that kid's going to have arthritis in the future. It's a surgery that's done to change a lifestyle. So if the patient wants to get back to sports and they can't do it because of their shoulder popping out of place, that would be a good reason to do it. Or, if they just can't get back to the normal activities of daily living. Some people, their shoulder will pop out of place when they're just reaching up to grab a jar of...or, a bottle of mild out of the fridge. That's changing their normal activities of daily living and they want to have something done. But if they're happy living with their shoulder and it occasionally may pop, I certainly wouldn't push them to do it.

00:41:06

TODD RITZMAN, MD: Sure. Good. A couple of other questions we could address. How common is this...This is from Leanna. How common is it to tear the labrum again once it's been repaired? If you could talk about recurrence, and maybe even add the caveat of historically the discrepancy in recurrence rates from the open and arthroscopic approach, versus now with the arthroscopic approach.

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KERWYN JONES, MD: Yeah. Well, I guess the short answer to that, Todd, is that the chance, depending on who does it and depending, again, on the patient, is somewhere between ten percent and less. So, if you look at all the studies that are out there, regardless of whether it was done arthroscopically or open, with today's arthroscopic techniques the chance is probably less than ten percent. Now, in the past the way...the reason why arthroscopic techniques took a while to develop is because, number one, people failed to recognize the fact that part of the problem was that the ligament was stretched out of place. And so, what people did was they took metal staples and essentially passed them down into that cartilage, used the metal staple to hold the cartilage back to the rim and then said, that was enough, we're done. Well, the problem

was that the labrum...I'm sorry, the capsule and the ligaments were still stretched out and they didn't address that.

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Well, now doctors have recognized that the capsule stretched out, and so as you can see with this technique here we pulled it tight in addition to fixing the cartilage. So I would say that either with the arthroscopic or open chance...or, open surgery, the chance of re-dislocation or of further problems is less than ten percent.

00:42:31

TODD RITZMAN, MD: Sure. And I think that probably wasn't true...Not probably. It certainly wasn't true five or ten years ago when we...when we were in training that the gold standard was really the open approach and that difference has really narrowed and they're difficult to differentiate now which, again, I think allows us to offer something minimally invasive without really compromising any surgical result whatsoever.

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Let's go on to another question. Maybe a little, I think interesting perspective. We know it well, having gone through surgical training. But, how does a specializing orthopedic surgeon go about learning to do this procedure without putting the patient at risk? Is it a question of seeing one, assisting one and then doing one?

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KERWYN JONES, MD: Well, that's the old adage. But, you know, in today's world a lot of techniques have been developed to train surgeons to do things differently. We have right here within Akron several centers where we send residents and work on plastic type materials that actually simulate the real cartilage tear, the real shoulder. They put the scope right into the shoulder joint, they pump fluid there – just like we'd do on a real patient – and they do the surgery. And they do that multiple times. And then they oftentimes will even do it on cadavers before they really want to set out on their own. But most importantly, as they do eventually get into the OR with us, and they have very little minimal involvement with as far as the technical part of the surgery. You can see that for the most part the surgery is primarily a one person job. But they're assisting there and then learning on other tools, so there are other tools outside of the live patient.

00:44:03

TODD RITZMAN, MD: Sure. We'll move ahead to another question. Pretty detailed, but I'll summarize it. This is from [Banorma?] in Algiers, actually. Has a twelve year old nephew that has had multiple dislocations. Has already had a surgery and now has pain. No more instability. It's hard to kind of gather all that together, but you can maybe imagine that he had an open shift. Now the shoulder is maybe too tight and leading to pain, but if you could talk about that issue a little bit.

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KERWYN JONES, MD: Yeah. That's possible. And it's interesting you said that, because that's the first thing I thought too.

TODD RITZMAN, MD: Yeah.

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KERWYN JONES, MD: My question to her would be, is the joint too tight? Because if it's tight and then that's going to end up with pain. Tight is not always good necessarily in this case. The other possibility is that it's just tight in one direction and it's getting pulled out the back of the shoulder joint now and they're starting to develop some impingement, or pinching, in the soft

tissues in the back of the shoulder joint. So that's difficult. That's a difficult problem and one that, unfortunately, we'd almost have to see the patient and evaluate them with a good exam to answer correctly.

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TODD RITZMAN, MD: Sure. Sure.

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JOE CONGENI, MD: I'd like to add one other thing here, you know, Todd. We've talked about it. One of the things that you talked about at the beginning, now we're working together as a group with orthopedists, with primary care docs, helping make the diagnosis of these kids and being on the field. I mean, unfortunately, one of the things, taking a step backwards, is I'm on the field when kids dislocate not infrequently. And so trying to reduce it when it's hard to reduce and, in other words, get it back...the ball back on the golf tee sometimes isn't always easy.

00:45:39

Even a step before that, one of the things that I'm asked a lot is, geez, it seems like there's an awful lot more kids that are getting dislocations these days and what can we do about that? You know, again, we have a great rehab group here and physical therapists that are really motivated to do a good job, you know, returning these kids back to sports. But also important for us is could we do anything prevention-wise, the step before so that kids aren't dislocating as much. I really think an answer to the first question, why are kids...why are we seeing this so much is in the last ten or fifteen years we see that look of athletes being bigger, stronger, faster. And so the collisions---

KERWYN JONES, MD: Yeah.

00:46:13

JOE CONGENI, MD: ---are more forceful. There's more energy placed, more stress placed across that shoulder joint. And I know that in my career I've seen more dislocations. SO the question is, could we train athletes differently? Could we get them on...You know, there's discussions of ACL prevention programs. You know, I really think with the group working together here, one of the things that's one of my goals, in the not too distant future, is to work on a shoulder dislocation prevention program.

00:46:35

TODD RITZMAN, MD: Sure. That's a good point. I think when talking about new things in the frontier, also maybe could you comment on after the injury occurs some of the new things that are happening with immobilization after a first dislocation regarding the Ito external rotation and mobilization.

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JOE CONGENI, MD: Right. Right. I mean, you know, invariably these things happen on a weekend where it's hard to get our hands on these different slings. But I mentioned before early on, pretty painful. We get the shoulder back in place, for instance, someone on a sideline on a Saturday morning or a Friday night. We get the shoulder back in place and for years we always put the shoulder into a sling in an internally rec...you know, rotated position. And what we found by good researchers, really in Japan, is that perhaps that's not the right position, and research is so important to us, is actually if we move the shoulder into more of an external rotated position we might be in better position.

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And so there's a new brace that's out there, but it needs to be used in the early setting, in the first twenty-four to forty-eight hours. So, we're talking a lot, certainly here at Children's, of getting

that brace in the emergency room and using it on kids who come in with a dislocated shoulder. Because if there's a chance for that to help the shoulder heal better and prevent the need of going through the surgery – the surgery is great and we're using it a lot for a lot of kids, but prevention is even better.

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TODD RITZMAN, MD: Thanks. I don't know if maybe each of you would like to just make a quick comment to summarize about anything you'd like to say that we've not covered, and then we'll start to wrap things up.

00:48:00

KERWYN JONES, MD: Well, I think it's important for people that are watching to remember, as Joe said at the very beginning, there's two different types of people who have dislocating shoulders. There's the traumatic one, and in most cases we will rehab them first, because I do believe there's a good role for rehab. Because not all those kids are going to dislocate again. But a lot of them still end up going back to surgery. And then there's the non-traumatic one, the one where it just starts to pop out over time. Most of those kids do not require surgery and will respond to physical therapy.

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TODD RITZMAN, MD: Joe, anything....

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JOE CONGENI, MD: You know, a question we're asked a lot now on the...on the backside, on the end of it, is after post-op rehab, you know, people ask about what do you...what are the phases of rehab? And it's pretty variable. You know, Kerwyn's going to certainly want protection on that work he did for a period of time. And then we start through a range of motion, and we work balance and we work strength. And then we work function. And when we get to that functional stage, for instance kids ask, when can I start lifting weights, and issues like that. When we get into that functional stage, when we start testing kids to see what their strength and motion looks like, we make decisions on things like contact or collision sports, or getting back in the weight room and lifting weights again. And it...I don't want to tell kids, hey, it's some sort of canned answer we can always give them. I think it's pretty variable, depending on the athlete that's in front of us.

00:49:17

TODD RITZMAN, MD: Great. Okay. Well, I think...I think we'll begin to wrap things up here. Again, just to reiterate, we're excited about our Center for Orthopedic and Sports Medicine here at Akron Children's Hospital. Feel like under one roof and one facility we can provide very excellent conservative care, non-operative care for sports injuries, shoulder injuries. If necessary, we can communicate with each other and offer pediatric orthopedic surgical care. And the lastly, we can complete the cycle as we saw with Meagan, with really state of the art rehab facility and excellent therapists and trainers, and people to get you through from the day of injury to that six or nine month point post-op where you're ready to get back to your sport.

00:50:07

This webcast will be archived and you can access it if you didn't see it all, you want to look through something again or you have a family member or know someone who you might want to refer it to on our website, akronchildrens.org. And we'd encourage you to do that. And lastly, we appreciate all your questions and you emailing them in, but the time to do that isn't over now. You can continue to do that over the next days or weeks and one of the three of us will get an answer back to you as soon as we can. So, please, if things come up or family members look at

it later, send us...send us your questions and we'll get you a response as soon as we can. We'd also like to thank Meagan for sharing her experience through this from start to finish in a very relevant personable way that I think is probably be good for you all to see. And, again, thank you for our time here.

00:51:07

NARRATOR: Thank you for watching this Bankart repair to correct shoulder instability from Akron Children's Hospital. ORlive makes it easy for you to learn more. Just click on the "Request Information" button on your webcast screen and open the door to informed medical care.

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