

Justin Arner:

Welcome, everyone. I'm Dr. Justin Arner from the University of Pittsburgh Medical Center in Pittsburgh, Pennsylvania. Today, I have the pleasure speaking with Dr. Patrick Denard of the Oregon Shoulder Institute, as well as Dr. Mariano Menendez, who is currently a shoulder and elbow fellow at Rush and will be joining the Oregon Shoulder Institute after fellowship. We will discuss their paper titled, Remplissage Yields Similar 2-Year Outcomes, Fewer Complications and Low Recurrence Compared to Latarjet Across a Wide Range of Preoperative Glenoid Bone Loss, which is currently in press in the Arthroscopy Journal. Welcome to you both and thanks so much for joining me.

Patrick Denard:

Yeah. Thanks a lot for having us, it's a pleasure.

Justin Arner:

Yeah, this is great. It's a great, great topic and certainly an ever challenging patient population. First of all, congratulations to you both. It's a big multi-center study with really a large number of patients and we have a lot to learn in this topic, so congratulations to you both.

Patrick Denard:

Absolutely. I think it just, it speaks to getting people together to really pool your data and we're fortunate to have some great friends in Alex Lädermann, Johannes Barth and Pablo Narbona, who are a big part of this.

Justin Arner:

Yeah. That's awesome. Especially when you can get people from all different backgrounds and different training, it really makes it valuable. Let's start with Dr. Menendez. Can you tell us a little bit about your study and the results? Just tell us a little bit about this thought process that you guys coming up with this and what you guys found.

Mariano Menendez:

Yeah, this study is basically, as you said, a multicenter retrospective study that it involves surgeons in four different countries. And our thought process was there's obviously different ways of addressing shoulder instability and we're still trying to find out what the ideal algorithm for treatment is. We decided to compare functional outcomes, return to sport, satisfaction and postop recurrence like complications in patients undergoing either primary arthroscopic Bankart repair with remplissage, to primary Latarjet.

Justin Arner:

Certainly an important question because certainly, like you mentioned, different camps and there a lot of complications that can be a result from some of these surgeries. Tell us a little bit about what you found and your main findings of the study.

Mariano Menendez:

Yeah. First of all, as you said, well we're able to get decent sample size, total of 258 patients, 70 remplissage, 188 Latarjet. And we found that at two years, the functional outcomes were as good or superior in the remplissage group compared to the Latarjet and then we also found a higher return to

sport for overhead and contact activities in the remplissage group with fewer complications and comparably low recurrence rates.

Justin Arner:

Yeah. I thought that was one of the most interesting parts of this study. Do you have any thoughts on why you think that is? It just something related to the bone block or the sling or more issues with the subscap or why do you think overhead and contact athletes did so well with remplissage?

Mariano Menendez:

That's a good question. I think it may be also, we did not have specific details of the types of sports that the patients were participating in. It could be a difference in terms of the Latarjets more so done in Europe than in the US. It could be just a simple difference in sports or expectations or wanting to return to the same level of activity. That's definitely a good question. It's hard for us to answer that question.

Justin Arner:

Right. That's that's for sure. Tell us a little bit about another interesting part was the different amounts of bone losses that were between the Latarjet and remplissage groups and how many were on and off track. I thought that was really interesting.

Mariano Menendez:

Yeah. As you said, it's very interesting that glenoid bone loss was actually higher in their remplissage group. The average glenoid bone loss percentage was 12% in the remplissage group versus 7.6% in the Latarjet and that was statistically significant. And then not surprisingly, we found that the off track lesions, the percentage was higher in the remplissage group compared to Latarjet. And that could be also a virtue of the fact that as we know, especially Dr. Barth, the French surgeons are a little bit more aggressive in terms of indications for primary Latarjet in athletes with small or no bone loss.

Justin Arner:

Right. Certainly still a lot to learn. Great points. Can you tell us a little bit about the difference in complications between the two groups? Certainly, that's a big knock on Latarjet and also rotation and issues with the rotator cuff, people also discuss with remplissage. Tell us a little bit about that.

Mariano Menendez:

Absolutely. In terms of complications, we found 6% rate of complications in the Latarjet and those were, we had a couple hematoma, six cases of either painful or loose hardware and then three cases of neuropraxia. That obviously they all were transient. And we had no complications in the remplissage group. And then when it comes to postop range of motion, there were no differences in terms of active for elevation and internal rotation. We did find a difference in terms of external rotation at this side, with patients undergoing Latarjet having 20 degrees more of external rotation compared to remplissage. An absolute number of 80 degrees compared to 60 degrees for the remplissage group.

Patrick Denard:

I think it's important follow up there that the group that underwent Bankart remplissage, they lost four degrees versus the Latarjet group gained 19 degrees. It's not as if the Bankart remplissage group was losing 20 degrees. And my honest take would be that this is probably due to difference in us measuring.

We postulated that it's possibly due to repairing the capsule on the outside of the graft, allowing a little bit more external rotation but in my heart of hearts, I really think it's due to the fact that most of the Latarjets coming from and that's just how he measured his center, if I had to really, really sort of give my best guess of why.

Justin Arner:

Certainly there's a margin of error with all these rotations and what you're measuring your mid from and everything. Certainly good point. That's another question I had is clinically, have you seen issues with motion? And has it been the clinical issue in the remplissage patients you've treated? You've done so many, Dr. Denard.

Patrick Denard:

Yeah, I really have not. Nothing that I can really detect is as substantial. Like I said here, we found an average of four degrees loss but that's not something I would really even pick up and I've never, knock on wood, I've never had a patient say, "Hey, I'm really bothered by my lack of external rotation." Now my one concern area is in the overhead thrower, who is going to be in that abducted external rotation position and perhaps really need to get that maximal external rotation to generate velocity. I'm cautious in those people in doing remplissage.

Justin Arner:

Great point, for sure. And since we're talking about different concerns and issues with remplissage, another question I had is have you seen much posterior shoulder pain? Or people talk about having referrals for people that have rotator cuff tears or what other things have you seen or cautions would you let us know about remplissage?

Patrick Denard:

Yeah. I rehab them the same. Anecdotally, I do feel like they have a little bit more pain compared to an isolated Bankart repair postoperatively. I've not made an attempt to quantify that. I've never seen a rotator cuff tear after remplissage. I think that's probably technique driven for the most part, especially now I use very small anchors through the posterior capsule. I use 1.8 millimeter knotless anchors, maximum of 2.6 and really trying to go through and just make one hole trans tendon and also going in line with the posterior capsule, not coming in at an angle and then over constraining. I think if you over constrain, you're going to have a risk of creating essentially what would be a type two type of failure because really you're not inseting the tendon per se, you're really inserting the posterior capsule into the defect.

Justin Arner:

Yeah. Great points. I really want to pick your brain about a lot of these little pearls because when you get in there and you start doing your first few of these, it's not as straightforward as what angle do you take? And tell us a little bit about how you do it in the location of the rotator cuff specifically and some more details about those pearls you started mentioning.

Patrick Denard:

Yeah. Number one, I'm a big advocate of lateral decubitus position because of the lower rate of recurrence that we see based on systematic review and the improved ability to place low anchors. I scope lateral decube in all my patients but specifically I would advocate that in the instability setting. I

think you're best off viewing from an ASL portal and prepping the Hill-Sachs lesion and placing your anchors first, prior to doing the Bankart repair. I know some people will say they will go back later but my experience is that within 20 to 30 minutes, you have quite a bit of swelling back there and it's more difficult to see. By viewing from the ASL portal, I'll then place my anchors through a portal posteriorly, right in line with the defect at the bottom and the top. And by viewing with an ASL portal, I feel like I can come exactly perpendicular to that defect and go through the capsule so that I'm not going to risk over positioning. I think if you view posteriorly and try to look back, you don't really have the same perspective so I think that's an important view to take.

Justin Arner:

That's a great point. And tell me, are you using the same posterior portal viewing portal? Are you using an accessory portal? And are you now you have a lot of really great technique videos, are you going to the subacromial? Or doing it more with the guide and doing it percutaneously?

Patrick Denard:

Right. Typically the portal placement that you need for anchor placement for this is more medial than your standard posterior portal. In instability, I make a low posterior portal that comes right in between the glenoid and humerus and that's going to be too medial for your anchor placement. I like to view ASL and then I like to make a separate portal. Traditionally, what I would do is I would place two anchors percutaneously through the cuff, it's through the posterior capsule, into the defect and then I would put a guide over those and just kind of snap the sutures and then go up in the subacromial space and find those sutures using the guide to protect them and then tie knots between. And then what I moved to over the last couple of years now is doing a knotless technique, which as you alluded to, we've published in Arthroscopy Technique. If somebody wants to see the full details, they can check that out.

But essentially I will take this accessory cannula and determine my angle of approach with a spinal needle. Once I have that adequate angle approach, I'll take the cannula down over a switching stick. I'll advance the switching stick so I can see it just above the capsule but obviously not through, put a cannula over that switching stick and use a circular motion to kind of clear out the soft tissue. And you usually can see the outline of the cannula. And in that way, you can really ensure that you're not in the deltoid still. And then I'll place both my anchors through that cannula. I'll do the inferior one first because once you place the superior one, it's hard to see the inferior one. Place the inferior one in first, the superior one in second. I'll leave those, go do my Bankart repair because I don't want to tighten the space too much to limit my working space, especially it'll limit your ability to get your instruments out in in the back. I'll go do my Bankart repair and then come back and then link the two anchors.

And I use knotless anchors, that allow me to create essentially a double mattress configuration. Steve Burkhart and Rob Hartzler have looked at that in the lab. They compared doing a double pulley technique with a tied knots, to using interlinked, knotless anchors and found improved mechanics with that type of construct. But the biggest benefit to me really is by doing this, you can avoid going into the subacromial space, which I think is just nice for a time saving. I also think honestly, we always try to do the right thing but it's really lowered my threshold. Having an easier technique naturally just lowers your threshold for doing something and given what we're seeing in the rates of recurrence here, I think it's the right way to go.

Justin Arner:

Yeah. You're certainly a leader in these techniques and descriptions of them so we certainly appreciate. I've tried both different techniques you've mentioned and your newer technique you're mentioning

really is fairly simple and great video. I definitely recommend reading that article and checking out that ATEC, arthroscopic techniques video. That's awesome. One other question I had is if you have a labral repair that you have to perform posterior capsule, labral repair, what order are you doing that? And are you usually doing that as you March around the back and then doing the remplissage afterwards? Are you putting the posterior anchors in first? Or how does that change your management?

Patrick Denard:

Yeah. If I'm still doing a remplissage, I'll still do those anchors first and then I'll do both my inferior anchors first, my posterior inferior and my anterior inferior, lock those down knotless and then I'll work up the rest of the way in the front. It's interesting, one of the topics that people have talked about for many years is this posterior anchors, should you just do this routinely? And there's some debate over that, the idea being that perhaps you can help tighten the posterior band of the inferior glenohumeral ligament. My belief there is you're sort of getting an effect that is similar to, but less than a remplissage. If you look at the biomechanical work that's been done on remplissage, what's really happening is it's not as much to me about filling the defect but you're really pulling the head posterior and providing an increased restraint to anterior force. And so I think that's probably what the posterior anchor was doing in some cases by just tensioning that capsule on the back a bit. But here, this is more dramatic in terms of the effect that you get.

Justin Arner:

It is certainly dramatic and impressive. You see when you center that head with those sutures, it makes you feel pretty good. That's great. Can you tell us a little bit about your approach in those with the anterior instability in regard to bone loss and kind of your algorithm with arthroscopic repair with and without remplissage and other treatments, if open Bankart plays a role and Latarjet and just kind of your thought process about it is? Because it's quite controversial.

Patrick Denard:

Yeah. We have another publication that is with ASMAR, that's accepted, where we looked at another cohort actually, in patients with less than 15% glenoid bone loss and we looked at most of those were therefore on track lesions and we compared isolated Bankart to Bankart and remplissage and we found lower recurrence in the Bankart remplissage group. It didn't read statistical significance but it was something like 2% versus 8% so we really felt like we're, we're seeing an advantage even in these patients that have quote unquote, on track lesions. I don't really use the glenoid track anymore. I think it's a nice calculation that's really helped us understand the Hill-Sachs defect and the glenoid defect in a combined manner. But the problem with it is it's a static number and it doesn't account for translation of the humeral head, capsular laxity and the activity of the patient.

For me personally, I really ask myself, who do I not do a remplissage on? And that to me is the first time dislocator, pretty much over the age of 25. Because if they're less than that, even if they have subcritical bone loss with an on track lesion, I've had enough failures and I feel like you can't overcome it with a capsular repair alone in the front so I will add a remplissage in those patients, even if they're on track. And that's been a progression from, again, it sort of gets to this technique and seeing that it's become easier to do, allowing me to expand my indications as I've gone along.

Justin Arner:

Yeah. That's great insight. Had another question regarding that. And are you ever performing remplissage in those high risk patients, say a football player, someone that maybe doesn't have a very

large Hill-Sachs but you know it's a riskier situation so more for the capsular management and decreased risk, are you curetting in an area posteriorly and almost not creating a Hill-Sachs, but in someone where you're really not as concerned with the humeral bone loss, just based on their risky sport or position?

Patrick Denard:

Yeah, exactly. Exactly. Another way to sort of answer that question is, okay, when do you go to Latarjet? For me, as a general rule that's going to be over 25%. I'll lower that threshold if I have a really young patient, like you describe, a young male under the age of 20, for instance who plays football, I'll drop down to 20%. Or in the revision setting, if I feel like the previous surgery's been well done, I will do a Latarjet but otherwise in those patients who are high risk, again, if they just have a couple millimeter Hill-Sachs defect, I will do a remplissage in those cases. I think it's important to you don't want to take down the bone but I think you want to curette up to the edge of the cuff laterally. Oftentimes there's a little cartilage rim that's left there so I'll curette that defect and then just go right up to the edge.

Another interesting thing too, we have another cohort where we've looked at patients with substantial bone loss, 25% and more. It was actually 15 but many of those patients had 25 and it's a really small group but we compared remplissage the Latarjet and we found that we had similar recurrence. If you are selective, I think you can actually have an effective outcome with remplissage in patients, even with significant glenoid bone loss. Now I'm not trying to advocate for that football player, who's got 20% or more glenoid bone loss to do remplissage. But if you perhaps have an older patient, maybe they're a lower demand, 30 year old who's had recurring instability, I think that you can consider a Bankart and remplissage even with significant bone loss.

Justin Arner:

Yeah. That's a great point. We really should continue to think about activity in this sport, like the literature has always shown us. That's awesome. Does open Bankart play any role in your practice? I know one of my mentors in my practice, Dr. Bradley's a big proponent in contact athletes and certainly there's a camp really that says there's not much of a role in their practice. Where do you stand in that aspect?

Patrick Denard:

Yeah, I'm one of these that I never did it in training. I've never done it in practice. I do a lot of open shoulder. I do a lot of shoulder replacements so I'd be comfortable with it but I just never really took care of patients in that manner. For me, I just ease here and I feel like if I can get the benefit of adding remplissage, it just makes sense to go arthroscopic. I don't have a role currently for open Bankart.

Justin Arner:

Yeah, great. Certainly John Kelly was a, was on the podcast a few months ago, I guess and he thinks that you really can get a bigger grab of capsule and that you get a better shift arthroscopically. Certainly some discussion there.

Patrick Denard:

You can really see really, really well and sort of understand the anatomy better in my view.

Justin Arner:

Right. For sure. More back on the track measurements. Tell me how you're evaluating the bone loss and the Hill-Sachs. And you mentioned the specific patient, which is certainly essential. Are you getting CT scans on these patients that have bone loss where you're concerned or in a risky sport? Tell us more about how you evaluate the Hill-Sachs specifically.

Patrick Denard:

Yeah. I'll get a CT scan if I'm concerned. Specifically, the patients you need to watch out for are the recurrent dislocator. We know as the number of dislocations increase, the severity of the bone loss increases. If I've had a patient who's had multiple dislocations, three or four dislocations, I'm going to get a CT scan to really evaluate the glenoid bone loss. But I really decide Latarjet versus arthroscopic based on the glenoid bone loss. And then intraop to do remplissage if I'm going arthroscopic based on their activity level, more than the actual Hill-Sachs defect in the glenoid tract. I used to measure it all the time intraoperatively. Now to be honest, I just measure it because I'm doing that to catalog it for research purposes but I don't hang my clinical decision making hat upon the glenoid track.

Justin Arner:

Right. Certainly a lot more different aspects regarding a patient to taking into consideration for sure.

Patrick Denard:

The other thing to me about this paper is I think some people may say, "Well, why not just do Latarjet?" And what really stands out here is the complications. Then the complication rate is just, as we see in this study and in other studies as we reference in the discussion, it's just much lower with the remplissage, at least as we perceive it now. And an additional factor that we don't talk about is that many of these patients are going to go on into posttraumatic arthritis, at an early age in sometimes their thirties, but oftentimes their forties and fifties and they're going to need an arthroplasty. And if you're doing an arthroplasty post Bankart remplissage, that's a much different animal in my view than doing that after a Latarjet because if you do it after a Latarjet, in my view, you pretty much obligate yourself to doing a reverse shoulder arthroplasty. Whereas if their subscap's not violated, you can do an anatomic.

Justin Arner:

That's a very good point. I have a lady that's in that exact circumstance now that was a gymnast. It sounds like a multidirectional capsular laxity kind of issue and she's about 50 and has terrible arthritis. And her subscap just is not, I don't think in a tolerated anatomic shoulder. She's had five open capsular shifts. And really I think, unfortunately it reverses all that she's going to be able to get in such a young age. It's a hard problem. It's a very good point.

One question that I wanted to ask as you mentioned, we don't really have the longterm data regarding what's going to happen with this tenodesis. What do you suspect we'll see with regarding to rotator cuff long term in the back or arthritis issues? There's been some really nice studies with Latarjet looking at the subscap and atrophy. What do you think we might see with remplissage down the line?

Patrick Denard:

Well, that is the question. That's why I said earlier, based on what we currently know, because that's my one remaining concern with remplissage, are we creating a problem that we don't know about that we're not going to find out for several more years? We have some pretty good longterm data, at least midterm data now, that appears clinically patients are doing really well. But in the back of my mind, I do wonder if by creating this increased stiffness that occurs biomechanically, if you're actually going to set

these patients up for some sort of arthritis down the line with perhaps even some posterior wear that's increased compared to not doing it. But it's a trade off because if you let them keep dislocating they're obviously going to increase their risk for arthritis as well.

Justin Arner:

A great point. Will we see more 2B glenoids in those folks but maybe their arthritis maybe will be 10 years later, rather than letting someone just continue to dislocate. That's a great point.

I had another question regarding, certainly remplissage in the scheme of things is fairly new thought process and is gaining traction. And certainly you're one of the leaders. We love talking to you about it but what do you think is missing in the literature? Or what kind of studies do you think really will add to this becoming more mainstream as the patients that you're describing, maybe in contact football players with minimal bone loss, where we someday might just be performing remplissage on those people without substantial Hill-Sachs lesions? What studies do you think you'll be doing in the future or ones that we should look forward to?

Patrick Denard:

Yeah, this is challenging because you need to get adequate numbers but I think you need two different randomized controlled trials in my view. One would be a randomized controlled trial of Bankart versus remplissage in patients with subcritical bone loss, which I would, I think, to be moderate would be 15%. Patients who are going to generally have on track lesions. I think we need that comparison. And I think we need a comparison of the converse. We need the comparison we did here but defined as patients with greater than 15% glenoid bone loss, comparing Latarjet versus remplissage, to see how they do.

Justin Arner:

Yeah, for sure. I'm sure it'll be coming, and will look to more great studies from you. Thanks again for both your time. I really appreciate you speaking with us about this. I just wanted to ask if you had any closing thoughts and what was on the horizon and do you think remplissage is here to stay? And do you think those indications we've discussed today will continue to grow? Kind of what are your thoughts about the future of instability in these difficult patients?

Patrick Denard:

I think it is here to stay, certainly at least for the foreseeable future. I think you're going to see more and more people moving away from the glenoid track and using remplissage more liberally. And I actually think when you get to patients who have larger degrees of bone loss, as we continue to have improved techniques for doing free bone blocks, for instance, you may see combination of free bone block arthroscopically, even with remplissage in some cases where you really have a lot of bipolar bone loss. I think you'll continue to see more and more of it.

Justin Arner:

It's an exciting time. Certainly we have a lot to learn and we're certainly learning more from these great studies from your group every day. Thank you both so much for sharing your knowledge and your time with us today.

Patrick Denard:

Awesome. Thanks a lot for having us.

Mariano Menendez:

Thank you.

Justin Arner:

Yeah. Thanks so much. Dr. Menendez and Dr. Denard's articles titled, Remplissage Yields Similar 2-Year Outcomes, Fewer Complications and Low Recurrence Compared to Latarjet Across a Wide Range of Preoperative Glenoid Bone Loss, is in press in the Arthroscopy Journal and is available online at arthroscopyjournal.org. Thanks so much for joining us.

Speaker 4:

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