The Case for Circumferential Labral Reconstruction of the Hip

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The indications for acetabular labral reconstruction are a subject of (sometimes intense) controversy. Our literature is full of examples of surgeons reporting good results with labral treatment from ranging from minimal debridement, to repair, to segmental and finally to circumferential reconstruction. This literature also reflects a shared experience among those of us have dedicated our careers to helping people with non-arthritic hip problems. That is, sometimes it may not matter how we treat the labrum; other times it matters quite a bit. Widely cited work showing superior results with repair vs debridement suggests that those debridement patients who didn't fare as well had undertreated labral pathology (but we need to be mindful that the majority of them still did well!). We can infer from this work, along with multiple other published reports--and from our shared experience--that how we treat the labrum does matter to a consequential percentage of our patients.

Are there good studies comparing segmental to circumferential reconstructions? Not really. But my experience with both indicates that circumferential is the better option in my hands. What follows is my rationale for why this may be. Keep in mind, my opinion might be worth exactly what you paid for it.

To drill down on this, it helps think of what the labrum does for a hip. There is ample evidence that the labrum is an important stabilizing structure in the hip. There is also good evidence that it can be a pain generator. This suggests that if we can retain or restore the stabilizing features of the labrum and eliminate the pain generators, we can give the patient the best opportunity to get over their hip problem. There are some labra that simply cannot be repaired. These include labra that are ossified, damaged beyond repair, have failed previous repair or debridement, sit atop a severe coxa profunda deformity, etc.. As debridement only helps to eliminate potential pain generating tissue, this is done with the hopes that this patient is both a patient who does not need a functional labrum to optimize hip function and that we have identified the correct portion to debride. Debridement, in this scenario, risks undertreatment.

A segmental labral reconstruction also risks undertreatment. While there are clearly hips where the area of labral pathology is well-defined, there are many where it is not. Segmental reconstruction, like debridement, presumes that the surgeon knows exactly the area of pathology and can treat it reproducibly. A circumferential reconstruction eliminates the variable of undertreating an area of labral (as well as acetabular) pathology.

I would argue that it is technically more difficult to restore a suction seal with a segmental reconstruction than with a circumferential reconstruction. With a segmental reconstruction, there are two sites of interface between the native labral tissue and the graft. The graft-labral junction is inherently weak and often puckered or everted off the femoral head when the hip is out of traction thus substantially limiting the efficacy of the suction seal.

Durability of these graft-labral interfaces is another concern. As both of these junctions are localized to the region of pathology as determined by the surgeon, they are placed in the areas of highest stress that have already failed (hence why this patient is having an operation). Circumferential reconstruction eliminates any graft-labral interface issues as the graft is fixed at the far antero-inferior and far postero-inferior acetabulum. With proper training and practice, a circumferential reconstruction will reproducibly restore the suction seal in every hip without risk of subsequent breakdown at the graft-labral interface.

Labral reconstructions are performed to reduce the risk of failure due to undertreatment of labral pathology. With segmental reconstruction, this risk is still present as the surgeon relies upon their perception of where the pathology lies. Additionally, placement of two graft-labral interfaces in high stress areas that have already failed introduces a level of risk not present with a circumferential reconstruction. Circumferential reconstruction offers an extremely reproducible mechanical restoration of the suction seal and hip stability without the risk of subsequent graft-labral interface breakdown.

It's important to remember that whatever treatment we perform on the labrum will only matter in a subset of patients. If the suction seal isn't restored at the end of the operation in a durable manner, you have essentially performed a riskier and more expensive debridement. Circumferential labral reconstruction is a difficult operation to master that eventually becomes very reproducible--but only after extensive training and experience.

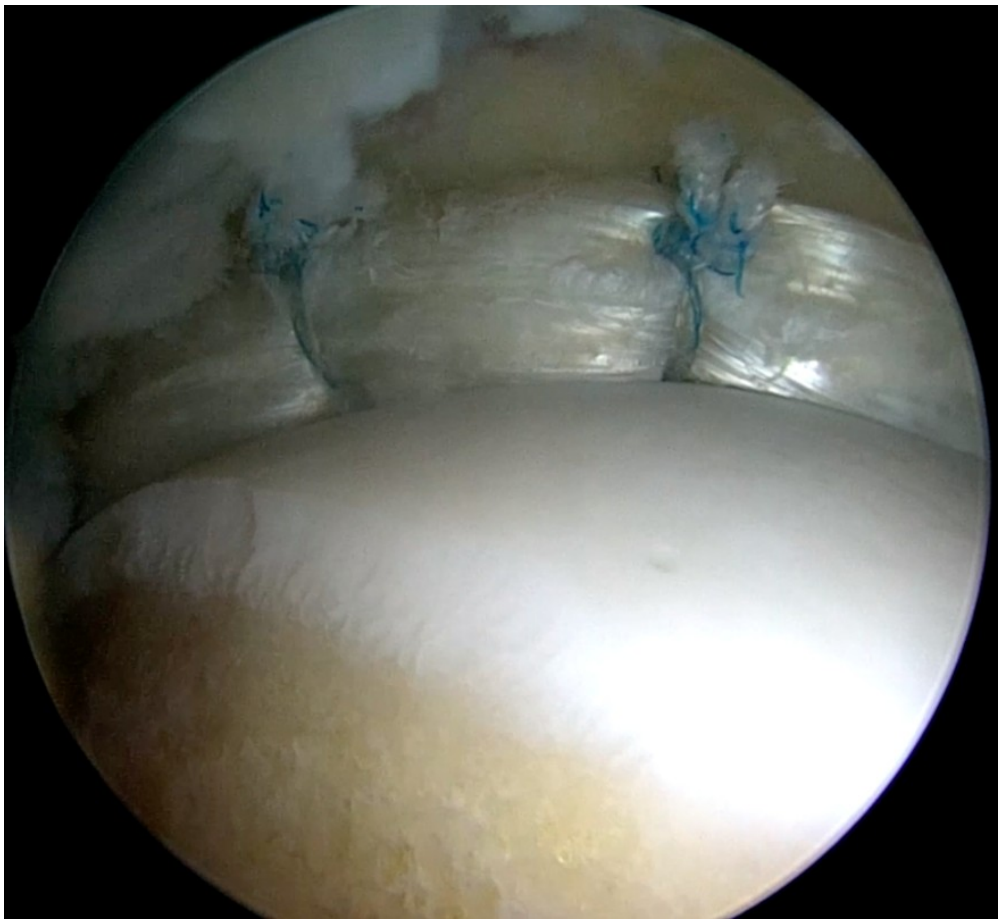
References:

1. Scanaliato JP, Wolff AB. "Primary Circumferential Acetabular Labral Reconstruction: Achieving Outcomes similar to Primary Labral Repair Despite more Challenging Patient Characteristics." Am J Sports Med. 2018;46 (9): 2079-2088.

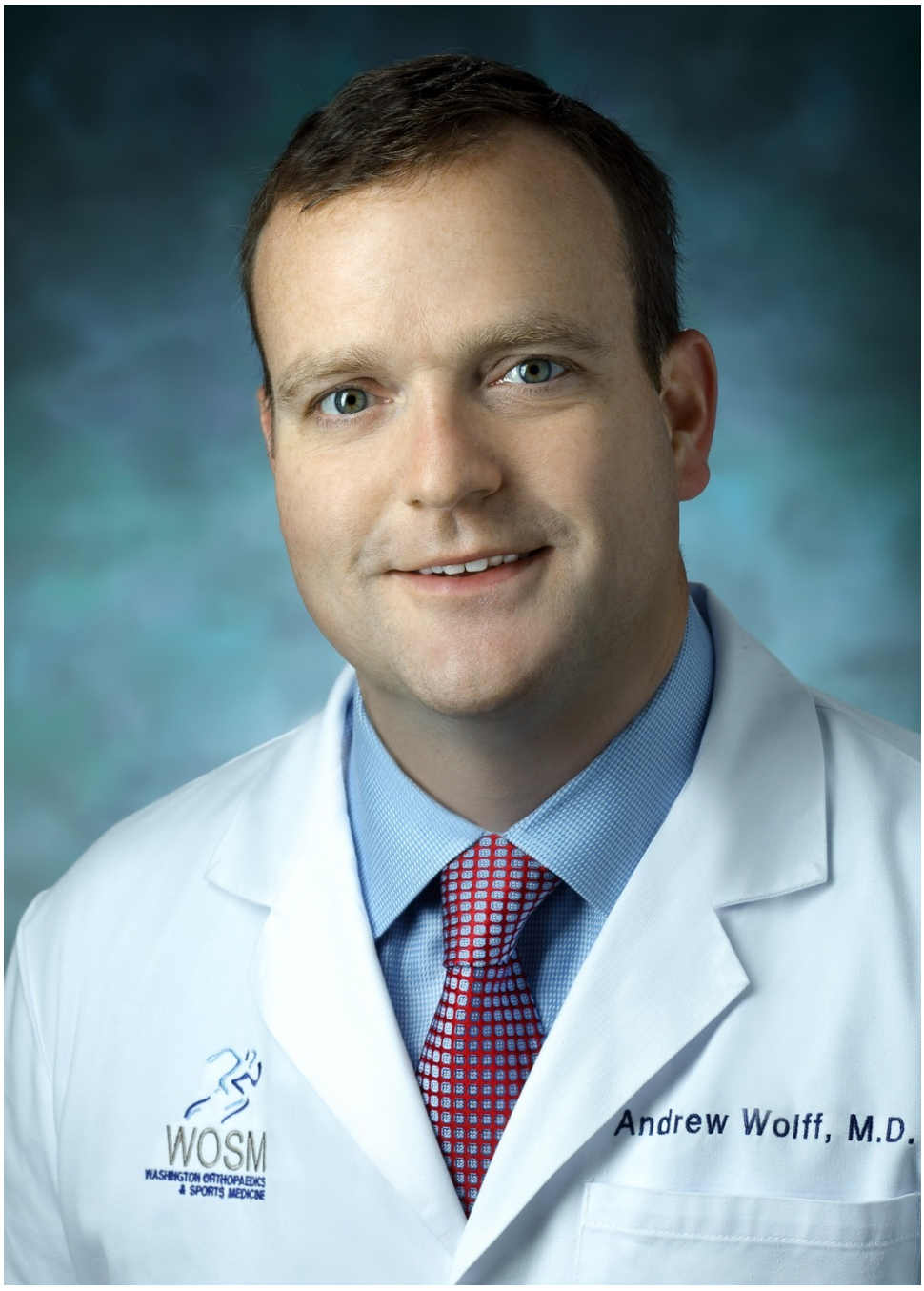
2. White B. "Allograft use in Arthroscopic Labral Reconstruction of the Hip with Front to Back technique: Minimum 2 year followup." Arthroscopy: The Journal of Arthroscopic and Related Research. Vol 32 (1). 2016. pp 26-32.

3. Wolff AB. "Management of the Acetabular Labrum" Clinics in Sports Medicine. 35(3): 345-60. 2016 Jul.
4. Larson CM. "Arthroscopic debridement versus refixation of the acetabular labrum associated with femoroacetabular impingement: mean 3.5-year follow-up." Am J Sports Med. 2012 May;40(5):1015-21
5. Haversath M. "The distribution of nociceptive innervation in the painful hip: a histological investigation." Bone Joint J. 2013 Jun;95-B(6):770-6
6. Alzazaharani A. "The innervation of the human acetabular labrum and hip joint: and anatomic study." BMC Musculoskelet Disord. 2014 Feb 14: 15:41.

7. Philippon MJ "The hip fluid seal—Part I: the effect of an acetabular labral tear, repair, resection, and reconstruction on hip fluid pressurization." Knee Surg Sports Traumatol Arthrosc (2014) 22: 722.



Restoration of the suction seal following circumferential labral reconstruction.



Head Shot

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Conflicts:

Consultant: Stryker, Inc.; Allosource, Inc.