Introduction: The purpose is to determine the prevalence and severity of radiographic risk factors on shoulder MR-arthrogram in patients with arthroscopically confirmed posterior labral tear and symptomatic posterior shoulder instability compared to an age-matched cohort without posterior instability who received shoulder arthroscopy for a distal clavicle excision.
Methods: Patients presenting at an academic institution over a 5-year period with symptomatic posterior shoulder instability that had arthroscopically confirmed repair of a posterior labral tear (66 patients) were compared with an age-matched control group of patients without posterior instability (56 patients) who had a shoulder arthroscopy for a distal clavicle excision. All patients received a shoulder MRA preoperatively and we excluded patients who had prior surgery and collagen disorders. Glenoid version, posterior humeral head subluxation, glenoid dysplasia, and linear and capsular area measurements were evaluated between the two groups. Interobserver reliability for continuous and categorical variables was performed for all measurements.
Results: Multivariable logistic regression revealed that the presence of glenoid dysplasia, posterior humeral head subluxation, and increased axial posterior capsular cross-sectional area were significant risk factors for posterior labral tears and symptomatic shoulder instability in comparison to the control group. Glenoid version was found to be a statistically significant risk factor with univariate analysis for posterior shoulder instability but not with multivariate logistic regression. Interobserver reliability was good to excellent for all measurements but poor for total capsular area.
Conclusion: The presence of glenoid dysplasia, posterior humeral head subluxation and increased posterior capsular area are independent radiographic risk factors in patients with posterior labral tears who develop symptomatic posterior shoulder instability. Identification of the critical radiographic variables on MRA assists in the accurate diagnosis and management of clinically significant posterior shoulder instability.

Arthroscopic Partial Rotator Cuff Repair in the Management of Massive Rotator Cuff Tears: Long-term Follow-up
SS-06
April 14, 9:25 AM
Stephen Weber, M.D., Presenting Author

Introduction: Surgical options for the patient with a massive rotator cuff tear remain limited. Short term reports have shown reasonable early results but long-term results remain lacking Presented here is the first report of all-arthroscopic partial rotator cuff repair in the treatment of massive, unrepairable rotator cuff tears with long-term follow-up.
Methods: Eighty patients with large or massive rotator cuff tears were evaluated. All patients were Thomazeau class 2 to 3 for atrophy, and Goutallier class 2 to 4 for fatty infiltration. All patients had primary closure attempted; if solid closure without tension could not be obtained by primary repair, partial rotator cuff repair with acromioplasty, preserving the coracoacromial ligament, was performed. All patients were reexamined, with UCLA, SST, and ASES scores obtained, and follow-up radiographs and MRI scans were obtained and compared to preoperative studies. MRI scans were obtained at a mean of 44 months postoperativeSuvivorship data was obtained, with the endpoint of reoperation and/or conversion to shoulder arthroplasty.
Results: Sixty five patients had repair of the infraspinatus only, with 15 patients combined infraspinatus and subscapularis. Follow-up was a minimal 36 months (average 50.7 months). While initial good or excellent results were obtained in 88% of cases final follow-up showed decreases in all outcome scores. Pain scores showed the most significant decrease, with functional scores showing less improvement. MRI scanning at final follow-up showed progression of atrophy and tear size despite partial repair in 78% of cases. Despite diminished outcomes with time, survivorship was 91% at follow-up.
Conclusion: Good early results can be obtained with partial rotator cuff repair, but these results tend to diminish with long-term follow-up. This technique represents a reasonable, low-morbidity salvage option for the patient with a rotator cuff tear that is not primarily repairable.

Triple-Loaded Single-Row versus Suture-Bridge Double-Row Rotator Cuff Tendon Repair with Platelet Rich Plasma Fibrin Membrane: A Randomized Control Trial
SS-07
April 14, 9:30 AM
F. Alan Barber, M.D., F.A.C.S., Presenting Author

Introduction: to compare the structural healing and clinical outcomes of triple-loaded single-row to suture-bridging double-row repairs of full thickness rotator cuff tears both augmented with platelet rich plasma fibrin membrane (PRPFM).
Methods: A prospective, randomized, consecutive series of full-thickness rotator cuff tears under 3cm in AP length were treated with either a triple-loaded single-row (20) or suture-bridging double-row (20) repair augmented with PRPFM. Randomization took place by opening a sealed envelope in the operating room after confirming the patient's eligibility. The primary outcome measure was cuff integrity determined by MRIs obtained 12 months postop interpreted by radiologists blinded to the study. Cho criteria were used to assess tears. Secondary outcome measures were American Shoulder and Elbow Surgeons, Rowe, Simple Shoulder Test, Constant, and Single Assessment Numeric Evaluation scores. An a priori power analysis was used to determine group size
Results: MRI and outcome scores were obtained in 40 patients (mean clinical follow-up 27 months and mean MRI interval 12.6 months). 3 of 20 single-row repairs (15%) and 3 of 20 double-row repairs (15%) had tears at follow up MRI. The single-row group had retears in 1 single tendon repair and 2 double tendon repairs. All 3 tears failed at the original attachment site (Cho type 1). In

the double-row group, retears were found in 3 double tendon repairs. All 3 tears failed near the musculotendinous junction (Cho type 2). All clinical outcome measures were significantly improved from the preoperative level ($p<0.0001$), but there was no statistical difference between groups postoperatively

Conclusion: There is no MRI difference in 12 month rotator cuff retear rates between triple-loaded single-row repairs or suture-bridging double-row repairs. Double-row repairs failed at the musculotendinous junction while single-row repairs failed at the reattachment site. No difference could be demonstrated between in clinical outcome scores either.

The Effect of Medial Knots on Footprint Contact and Self-Reinforcement in TOE Rotator Cuff Repair

SS-08

April 14, 9:35 AM

Maxwell Park, M.D., Presenting Author
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Introduction: Transosseous-equivalent (TOE) rotator cuff repair has been shown to demonstrate a self-reinforcing effect, providing a protective mechanism in the face of potentially destructive forces. A variant, which uses tape-type sutures, has been performed clinically with and without medial row mattress knots. This study assessed the effect of medial row knots at the tendon-footprint interface.

Methods: In 8 fresh frozen human shoulders, TOE supraspinatus repairs using tape-type sutures with (knotted) and without (knotless) two medial row mattress knots were performed in each specimen. A Tekscan pressure sensor was fixed at the tendon-footprint interface prior to all repairs. Parameters included footprint contact force, area, pressure and peak pressure. The supraspinatus tendon was loaded with 0, 15, 30, 45, and 60 N at 0° and 30° abduction, with 0° humeral rotation.

Results: Medial row knots did not significantly change footprint contact force, area, pressure, or peak pressure under all conditions. The knotted repair had increases in footprint contact pressure with increasing load at both abduction angles. The knotless repair demonstrated the same relationships for footprint contact pressure with increasing load. This relationship was also seen for footprint contact force for both repairs. With increasing load, the knotless repair had a significantly higher progression (slope) of footprint force and pressure ($P < 0.05$).

Conclusion: There is no measurable change in tendon-footprint contact force, area, pressure, or peak pressure with the addition of medial row knots at both abduction angles. In addition, the lower progression (slope) of footprint force and pressure seen with the addition of medial row knots demonstrates that they can inhibit the self-reinforcing effect of the TOE repair. Knotless TOE repair using tape-type sutures may provide superior tendon-footprint interface characteristics and improve healing potential under post-operative conditions, while avoiding the risk of medial over-tensioning, strangulation, and catastrophic failure at the medial tendon.

Cost-Effectiveness of Reverse Total Shoulder Arthroplasty vs Arthroscopic Rotator Cuff Repair for Symptomatic Large and Massive Rotator Cuff Tears

SS-09

April 14, 9:40 AM

Eric Makhni, M.D., M.B.A., Presenting Author
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Introduction: The goal of this study was to compare the cost-effectiveness within the United States healthcare system of arthroscopic rotator cuff repair versus reverse total shoulder arthroplasty in patients with symptomatic large and massive rotator cuff tears without cuff-tear arthropathy.

Methods: An expected-value decision analysis was constructed comparing the costs and outcomes of patients undergoing arthroscopic rotator cuff repair and reverse total shoulder arthroplasty for large and massive rotator cuff tears. Comprehensive literature search provided input data to extrapolate costs and health utility states for these outcomes.

Results: Arthroscopic rotator cuff repair was the preferred strategy, superior to non-operative care, with an incremental cost effectiveness ratio (ICER) of $15,500 / quality adjusted life year (QALY), and dominant over primary reverse total shoulder arthroplasty. The results in favor of arthroscopic rotator cuff repair as the dominant strategy held as long as the lifetime progression rate from re-tear to end-stage cuff-tear arthropathy was less than 89%.

Conclusion: Arthroscopic rotator cuff repair — despite high rates of tendon re-tearing — for patients with large and massive rotator cuff tears presents as a more cost-effective initial treatment strategy when compared to primary reverse total shoulder arthroplasty.

Revision ACL Reconstruction in Children and Adolescents

SS-10

April 14, 11:30 AM

Melissa Christino, M.D., Presenting Author
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Introduction: Results of revision ACL reconstruction in pediatric patients has not been well studied. The purpose