paring the tension at the articular margin between small and large tears (0.28 vs 0.63 lbs), a difference was noted ($p<0.01$). Significance was also achieved when comparing the tensions at the lateral tuberosity ($p<0.04$) between small and large tears (1.73 vs. 2.84 lbs).

Conclusion: This study demonstrates a significant 5-fold difference in the amount of tension the rotator cuff tendon experiences under medially-based single and laterally-based double-row constructs at the time of repair. Larger, retracted tears >2 cm require significantly more tension to reapproximate to both the articular margin and lateral tuberosity.

Clinical and Radiographic Results of Partial Repairs in Irreparable Rotator Cuff Tears: Preliminary Report (SS-05) *Jae Chul Yoo, M.D., Kyoung Hwan Koh, M.D., Kyung Jea Woo, M.D., Min Soo Shon, M.D., Kyung Ho Koo, M.D.*

Introduction: Large to massive rotator cuff tears are challenging conditions in shoulder surgery and frequently it is impossible to repair completely even with the advancement of the knowledge and repair technique. For those irreparable rotator cuff tears, several alternative treatment options can be considered. Among them partial repair (so-called force couple repair) has gained some popularity in that it can be lead to pain relief and functional improvement. The purpose of this study was to report the preliminary clinical and radiographic results of arthroscopic force couple repair for the irreparable rotator cuff tears.

Methods: From June 2005 to February 2008, 101 large to massive rotator cuff patients were arthroscopically operated. Among them sixteen cases of force couple repair (posterior cuff repair with or without repair of upper portion of subscapularis) for the irreparable rotator cuff tears were available in evaluation. Clinical assessments were done at final follow-up with pain visual analogue scale (PVAS) and American Shoulder and Elbow Surgeons' (ASES) score. Postoperative acromiohumeral distance and arthritic change were compared with the preoperative plain radiographs.

Results: The mean follow up was 27.3 months (15~46) and the mean age was 66.6 years (57~76). There were 7 male and 9 female patients. PVAS and ASES score was improved from 4.4 ($\pm$2.5) and 39.0 ($\pm$10.8) to 2.1($\pm$2.3) and 80.3 ($\pm$16.8) ($p=0.003$ and 0.002, respectively). Three patients rated excellent, 9 patients rated good, 3 patients rated fair, and one patient rated poor. Acromiohumeral distance was measured as 6.6 ($\pm$1.7) mm preoperatively and 6.2 ($\pm$1.7) mm postoperatively. There was no statistical difference ($p=0.387$). Degenerative change by Hamada classification was not progressed postoperatively ($p=0.201$).

Conclusion: Partial repair for the irreparable rotator cuff tear showed good clinical results and no progression of acromiohumeral distance and degenerative change at mean 2.3 years after surgery.

Arthroscopic Treatment of Rotator Cuff Pathology in Patients with Concurrent Glenohumeral Arthritis (SS-06) *Raymond R. Drabicki, M.D., Larry D. Field, M.D., Felix H. Savoie III, M.D., J. Randall Ramsey, M.D., E. Rhett Hobgood, M.D.*

Introduction: Managing patients who have rotator cuff pathology and glenohumeral arthritis poses a difficult clinical dilemma. The aim of this study was to examine the clinical outcomes of patients undergoing arthroscopic management of rotator cuff pathology with subacromial decompression and rotator cuff repair as well as debridement for glenohumeral arthritis.

Methods: A retrospective review of 55 consecutive patients with clinical and radiographic findings strongly suggestive of rotator cuff pathology as well as with clear radiographic and clinical evidence of glenohumeral joint osteoarthritis was conducted. Surgical treatment included arthroscopic debridement, chondroplasty, and microfracture of grade III and IV humeral and glenoid lesions, subacromial decompression, and rotator cuff repair if warranted. Pain, range of motion, and progression of osteoarthritis on radiographic imaging were evaluated in all patients. A shoulder questionnaire at final follow up was used to assess subjective measures and patient satisfaction. Outcomes were evaluated using ANOVA statistical analyses and post hoc tests.

Results: All 55 consecutive patients with an average age of 64.7 years were evaluated. Chondroplasty and microfracture techniques were employed to address all articular lesions. Arthroscopic rotator cuff repairs were performed in 29 (53%) patients. Average follow up was 38.1 months at which time average forward flexion and external rotation improved from 119 to 144 degrees ($p<0.038$) and 24 to 40 degrees ($p<0.043$) respectively. 67% of patients reported mild or no limitations with the use of their shoulder and 44 (80%) reported improvements in pain level. Only 3 (6%) patients reported severe limitations. Two of these patients underwent subsequent shoulder replacement within 1 year after the index procedure.

Conclusion: Often, patients with rotator cuff pathology have concurrent glenohumeral arthritis. Failure of conservative management has often been met with limited options, namely shoulder replacement in this specific

patient population. The results of this study suggest that arthroscopic subacromial decompression and rotator cuff repair, if warranted, along with glenohumeral debridement for arthritis consistently improved motion and function in patients with this specific group of pathologies and should be considered as a surgical alternative to shoulder replacement.

Platelet-rich Fibrin Matrix in the Management of Arthroscopic Repair of the Rotator Cuff: A Prospective, Randomized Study (SS-07) *Stephen C. Weber, M.D., Jeffrey I. Kauffman, M.D., Stephen Katz, M.D., Carol Parise, Ph.D., Sophia J. Weber*

Introduction: Arthroscopic rotator cuff repair has led to a high rate of patient satisfaction with clinical outcomes equivalent to open repair at long-term follow-up. Multiple studies however have shown high rates of anatomic failure, approaching 80% in some studies. Techniques such as double-row repair have not been shown to dramatically decrease the rate of anatomic failure in comparative studies. Biological augmentation would seem to be a reasonable technique to improve healing rates. Early, anecdotal studies have suggested both improved healing rates and improvement in perioperative morbidity with platelet-rich fibrin matrix (PRFM). This study represents the first prospective, randomized study to assess these claims.

Methods: The study design was approved by institutional review board. Pre-study power assessment suggested that a sample size of 30 patients in each group would allow detection of a 20% difference in perioperative pain scores. After appropriate informed consent, patients were randomized to arthroscopic treatment either with or without PRFM. All patients had arthroscopic rotator cuff repair performed under general anesthesia using standard suture-anchor technique. Those patients randomized to PRFM had the arthroscopic application of PRFM at the conclusion of the repair as described by Anderson. Post operative rehabilitation was identical between groups. Patients were assessed at one, three, six weeks and three months postoperatively. Serial VAS scores were obtained, as well as SST scores at each interval. Final scores for each group included UCLA and ASES scores.

Results: No complications occurred in either group. All patients had surgery performed as an outpatient procedure without incidence. VAS scores and post operative narcotic use did not differ significantly between the two groups. Serial SST and VAS scores showed a trend at six weeks towards the non-PRFM augmented group, but there was no significant difference at any time between the two groups. Preliminary review of post operative radiographs showed residual defects in both groups; recurrent defects were correlated with patient age ($r=0.88$) and size of tear (0.72) but differences in residual defects in the treated and untreated groups were not significantly different.

Conclusion: Within the power of this study, PRFM was not shown to significantly improve perioperative morbidity. Early clinical results were similar between the two groups. While longer-term follow-up may show differences, early follow-up does not show significant improvement in structural integrity.

Rotator Cuff Repairs Augmented by Platelet Rich Plasma Evaluated with Magnetic Resonance Imaging and Clinical Outcomes (SS-08) *Scott A. Hrnack, M.D., F. Alan Barber, M.D., Onur Hapa, M.D.*

Purpose: To assess the effect of platelet rich plasma augmentation on the clinical outcomes and postoperative healing as measured by magnetic resonance imaging of arthroscopic rotator cuff repairs. Introduction: The incidence of tendon rerupture following rotator cuff repair varies depending upon the patient's age, number of tendons involved, and tear size. Reported retear rates of 80% to 90% exist in the radiology literature and up to 57% in the orthopedic literature. Platelet rich plasma (PRP) has emerged as a new technology believed to stimulate revascularization of soft tissue and increase the concentration of growth factors to improve and accelerate tendon healing. PRP is being used to augment soft tissue reconstructions including arthroscopic rotator cuff repairs. Our hypothesis was that the addition of PRP would result in improved healing of arthroscopic rotator cuff repairs.

Methods: A prospective series of patients undergoing arthroscopic rotator cuff repair was studied. Patients were randomized into PRP and non-PRP groups. All patients had diagnosed rotator cuff tears from both physical examination and preoperative MRI. A single row rotator cuff repair was performed by same surgeon. At the end of the repair, half of the patients had a preformed platelet rich plasma globule sutured into the repair site. Postoperative rehabilitation was held constant. Postoperative MRIs were obtained at as early as 3 months after surgery to evaluate the presence of rotator cuff defects, their size, muscular fatty atrophy, and any tendon retraction. Additional outcome measures used included the ASES, Rowe, SANE, Simple Shoulder Test, and Constant score.

Results: 34 patients (9 females, 25 males) with average age 57 years (range, 43-69) were enrolled in the