

males and 21 females with an average age of 57 years old (range, 16-82). MRI was performed with a 1.5-Tesla MRI system (Signa HDx, GE medical systems). Twenty-one shoulders had no rotator cuff tear (group A), and 24 shoulders had rotator cuff tear: 7 incomplete (group B), 9 small to medium (group C) and 8 large to massive tears (group D). T2 mapping was performed at a proximal muscular slice in oblique sagittal images and a color-coded T2-calculated maps were generated using MATLAB software (Mathworks, Natick, MA, USA). Representative images are demonstrated in the figure. In the color scale, blue represents areas of short T2 value and red represents areas of long T2 value. Shoulder without rotator cuff tear shows short T2 value (a) and shoulder with rotator cuff tear shows long T2 value (b). For T2 measurements, the region of interest (ROI) was drawn manually using an image processing software (EXA vision; Ziosoft, Tokyo, Japan). Average T2 values of the supraspinatus (SSP) and infraspinatus (ISP) muscles were measured. Student's t-test was used for statistical analysis and the level of significance was set at <0.05 .

Results: Average T2 value of SSP in groups A, B, C and D were 33.7 ± 2.4 , 35.9 ± 3.7 , 40.9 ± 3.7 and 49.7 ± 11.2 msec, respectively. Average T2 value of ISP in groups A, B, C and D were 33.1 ± 2.1 , 32.2 ± 2.3 , 37.3 ± 3.0 and 44.7 ± 6.0 msec, respectively. No significant difference was observed in T2 value of both SSP and ISP between groups A and B. However, T2 value significantly increased with extension of tear in both muscles.

Conclusions: Fatty infiltration of rotator cuff muscles increased with extension of tear. T2 mapping might be useful in quantitative evaluation of fatty infiltration of rotator cuff muscles.

Coracoid Impingement: A Prospective Cohort Study on the Association between Coracohumeral Interval Narrowing and Anterior Shoulder Pathologies (SS-09) *Peter J. Millett, MD, MSc, Sepp Braun, MD, Marilee P. Horan, BS, and Tiffany L. Tello, BA*

Introduction: Pathology of the rotator interval (RI) can be an important, although often overlooked cause of shoulder pain. A narrowed coracohumeral interval can lead to subcoracoid impingement and pain. The purpose of this study is to determine whether the width of the coracohumeral interval (CHI) on routine MRI is related to pathologies of the rotator interval (RI).

Methods: Surgical data was collected prospectively for consecutive patients who underwent arthroscopic shoulder surgery. CHI was measured on axial and oblique sagittal preoperative routine MRI studies of 94

(26 males, 68 females, average age 48.4 years) patients. 26 patients had previous surgery.

Results: The average coracohumeral distance was 11.3 mm (range 3.8 - 19.2, SD 3.7). CHI decreased with age ($r=0.205$; $p=0.47$). There was no association among CHI, gender or previous surgery ($p>0.05$). Pathologies of the RI (defined as long head of the biceps tendon (LHB), subscapularis or biceps pulley) were closely related to narrowing of the CHI. There was a highly significant difference in patients with RI pathologies (10.2 mm) versus without (12.3 mm) ($p=0.006$). Patients with a biceps pulley tear had highly significant narrower CHI compared to shoulders with no tear (9.5 vs. 11.9; $p=0.003$). Narrowing of the CHI is also highly significant related to rotator cuff tears including subscapularis and supraspinatus tendon ($p=0.008$). A complete rotator cuff tear had a smaller CHI (9.6) compared to partial tears (11.2) or no tears (12.3) or. However, patients with rotator cuff tears were older than those without. The CHI was highly significant smaller in patients with pathologies of the LHB (10.4 mm) versus no LHB pathology (12.4 mm) ($p=0.009$).

Conclusions: This study shows that subcoracoid space narrowing is closely related to pathologies of the RI and rotator cuff. The CHI varies across different shoulder pathologies. The CHI narrows as patients get older, and is reduced in patients with biceps pulley tears and rotator cuff tears. This supports the findings that coracoid impingement can cause lesions of the LHB, the biceps pulley and is a possible cause for rotator cuff tears. The importance of the CHI for these pathologies might have been underestimated as such in the past. The threshold at which to perform a coracoidplasty is still yet to be defined. However we recommend assessment of the CHI in all patients with RI pathologies and coracoidplasty in appropriate clinical situations.

TNF-alpha Blockade Improves Early Tendon-to-Bone Healing in a Rat Rotator Cuff Repair Model (SS-10) *Lawrence V. Gulotta, MD, David Kovacevic, MD, Frank A. Cordasco, MD, and Scott A. Rodeo, MD*

Summary: TNF-alpha blockade can improve the histology and biomechanical strength of a rotator cuff repair at early timepoints in a rat model.

Introduction: Rotator cuff tendons heal to bone with a fibrous scar tissue interface that is mechanically weaker than the native insertion site. This makes surgical repairs prone to failure. The presence of an inflammatory response is responsible for the formation of this scar tissue. This is a major mediator of inflammation and is upregulated in the subacromial bursa of patients with rotator