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Arthroscopic Versus Open Rotator Interval Closure: Impact on Glenohumeral Stability and Range of Motion (SS-01). *Matthew T. Provencher, MD, Timothy Mologne, MD, Michio Hongo, MD, Kristin Zhao, MD, James Tasto, MD, Kai An, MD*

Summary: Although RI closure is often advocated as an adjunct in certain conditions of shoulder instability, current evidence is largely based upon open studies which have documented improved posterior and inferior stability after open RI closure. The open RI closure studies are often applied to arthroscopic RI closure, even though arthroscopic closure plicates dissimilar tissue in a different vector from open closure. Arthroscopic RI closure conferred little additional stability to the shoulder, while open RI closure only improved anterior and inferior stability. This study calls into question the practice of routine closure of the rotator interval in certain cases of shoulder instability, especially with arthroscopic techniques.

Purpose: There is considerable debate regarding the role of rotator interval (RI) repair of the shoulder in order to improve glenohumeral stability. Although RI closure is often advocated as an adjunct in certain conditions of shoulder instability, current evidence is largely based upon open cadaveric studies which have documented improved posterior and inferior stability after open RI closure. The open RI closure studies are often applied to arthroscopic RI closure, even though arthroscopic closure plicates dissimilar tissue in a different vector from open closure. The purposes of this study are to investigate the differences between open and arthroscopic repair of the RI on glenohumeral translation and range of motion. Additionally, we seek to determine if the addition of either an open or arthroscopic RI closure increases stability of the shoulder.

Methods: A total of 14 fresh-frozen (10-paired) cadaveric shoulder specimens were mounted in a custom testing apparatus using infrared sensors to document glenohumeral translation and rotation, randomly allocated to either open (7) or arthroscopic (7) plication of

the RI. The following were measured first with an intact and vented specimen, 1) external and internal rotation at neutral, 2) external and internal rotation at 90° abduction, 3) anterior and posterior translation at neutral rotation, 4) anterior translation at 90° abduction with external rotation, and 5) posterior translation at 90° abduction with internal rotation. A RI repair was then performed by either open or arthroscopic techniques with the arm placed in 45° of external rotation, and the testing sequence repeated to determine the effect on glenohumeral kinematics after RI repair.

Results: Posterior stability was not improved from the intact state by either open or arthroscopic repair. The sulcus stability was only improved in the open group (5.7 mm to 2.9 mm, $p=0.028$), but not arthroscopically (5.1 mm to 4.1 mm, $p=0.499$). Neutral anterior stability was improved in open (7.2 mm to 2.6mm, $p=0.018$), but not arthroscopically (2.3 to 2.4 mm, $p=0.5$). However, anterior stability with ER at 90° was decreased in the arthroscopic repair group (5.5 mm to 3.1 mm, $p=0.006$). (Figure 1) The mean loss of ER in neutral was 40.8° in the open group versus 24.4° in the arthroscopic group ($p=0.0038$). ER in 90° abduction demonstrated more loss arthroscopically (11.7°) versus open (4.8°), $p=0.018$. (Figure 2) There were no significant differences in loss of IR in either neutral or 90° abduction.

Conclusions: Posterior stability was not improved by either open or arthroscopic rotator interval repair and sulcus stability only improved by the open technique. Anterior stability in neutral was improved after open repair, and in the arthroscopic repair group with the arm abducted. One should be aware of the potential loss of ER after either repair method. This study calls into question the practice of routine closure of the rotator interval in certain cases of shoulder instability, especially with arthroscopic techniques.

Hill-Sachs “Remplissage:” An Arthroscopic Solution For the Engaging Hill-Sachs Lesion. (SS-02). *Eugene Michael Wolf, MD, Michael Pollack, MD, Chad Smalley, MD*