

Clinical Grading of Hill-Sachs Injuries: Association with Glenoid Bone Loss and Clinical Application of the “Glenoid Track” Concept in Terms of Humeral Head Engagement (SS-13) *Brian Barlow, M.D., MC USN, Paul Metzger, M.D., MC USN, William Peace, M.D., Dominic Leonardelli, M.D., MC USN, Daniel Solomon, M.D., MC USNR, Matthew T. Provencher, M.D., MC USN*

Introduction: The purposes of this study were to correlate the amount of glenoid bone loss with the extent of Hill-Sachs injury and clinically verify the “glenoid track” concept. In addition, we sought to investigate correlation across multiple Hill-Sachs grading scores with demographic variables such as time of instability and number of dislocations/instability events, and determine the mean values of Hill-Sachs size across multiple scoring systems.

Methods: A total of 205 patients treated for recurrent shoulder instability over a two-year period were reviewed. Of these shoulders 173 (80.8%) had an adequate shoulder MRI/MRA for evaluation. A total of 140 of these patients had a Hill-Sachs lesion and were included in the final radiographic analysis and grading of lesions with a mean age of 27.6 (SD 6.9), mean length of instability of 43.4 months (SD 58.7), and a mean of 7.2 dislocations (SD 16.9). Hill-Sachs lesions were quantified radiographically based on the Rowe Grade, the Flatow percentage of articular cartilage involved, the Franceschi Grade (cartilaginous, bony scuffing, hatchet fracture), the Richards and Hall degrees of lesion involvement on axial cuts, and the percentage of articular cartilage involvement on sagittal oblique images. The “glenoid track” was measured and if the size of the humeral head lesion and glenoid bone loss large enough (84% relative to each other), then the humeral head was said to be outside the “glenoid track” and at high risk for engaging and this number (percent) of patients recorded.

Results: The mean Rowe length was 19.1 (SD 3.2) mm and depth was 5.1 mm (SD 2.0); mean Richards arc was 7.1 degrees (SD 4.2); mean Franceschi score was 1.9 (SD 0.8); and mean glenoid bone loss was 7.6%. A total of 22 (15.7%) patients were determined to be outside the “glenoid track” and at higher risk of humeral-glenoid engagement. From regression analysis, patient age and number of dislocations were jointly predictive of being outside the “glenoid track” ($p = 0.015$), number of dislocations was predictive of glenoid bone loss ($p = 0.01$) and number of dislocations was predictive of percentage of articular cartilage involvement on sagittal oblique MRI ($p = 0.015$). More dislocations also correlated with larger Hill-Sachs lesions as well as larger

extent of combined glenoid and humeral bone loss ($p < 0.015$).

Conclusion: Hill-Sachs injuries are common in shoulder instability, and one should look closely at the extent of glenoid bone loss in addition to the size of Hill-Sachs lesion in order to assess more completely the potential for glenohumeral engagement. In this cohort, approximately 15% of the instability patients with a Hill-Sachs injury were felt to be at increased risk of glenohumeral engagement with bone loss outside the “glenoid track”. In addition, we determined that there is an association with the “glenoid track” in regards to age and number of dislocations, which indicate that this classification system may have prognostic and therapeutic value. However, no significant association was found between key patient variables such as age, length of instability or number of dislocations and any of the other classification systems.

Arthroscopic Remplissage with Bankart Repair for the Treatment of Glenohumeral Instability with Hill Sachs Defects (SS-14) *Min Jung Park, M.D., MMSc, Grant Garcia, B.A., Amit Patel, M.D., Fotios P. Tjoumakaris, M.D., John D. Kelly IV, M.D.*

Introduction: The treatment of recurrent anterior glenohumeral instability is complicated when there are bony defects present on either the humeral or glenoid side. Several studies have documented poor outcomes with arthroscopic Bankart repair when sizable defects are encountered at arthroscopy. The following investigation seeks to determine whether Arthroscopic Remplissage with Bankart repair is an effective treatment strategy for patients with both glenoid bone loss and engaging Hill Sachs defects.

Methods: Between 2005 and 2008, 23 patients underwent Arthroscopic Bankart Repair with Remplissage for the treatment of recurrent anterior glenohumeral instability and large Hill Sachs defects. At arthroscopy all patients were found to have both erosion of the anterior glenoid and an associated engaging Hill Sachs defect. Patients were followed post-operatively with the Western Ontario Shoulder Instability Score (WOSI), the American Shoulder and Elbow Society Score, and the PENN Shoulder Score. Recurrent subluxation or dislocation was documented.

Results: Of 23 patients, 18 were male and 5 were female. The average age of the patients was 24.4 years. The average length of follow-up in this series was 24.4 months. At final follow-up, only 1 patient reported a recurrence of instability and this was documented as a dislocation requiring closed reduction. The average