Arthroscopic Rotator Cuff Repair Patient-Reported Outcomes Measurement Information System (PROMIS) Scores Inferior in Patients with Preexisting Cervical Spine Conditions with Comparable Achievement of Minimal Clinically Important Difference (MCID) Compared to Controls

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INTRODUCTION:

Due to the aging population of the United States, many pathologies of chronic overuse and degeneration are increasing in prevalence. Among these are rotator cuff tears, which are often complicated by preexisting conditions such as cervical spine disease. The goal of this study is to determine the influence of cervical spine conditions on outcomes following arthroscopic rotator cuff repair. Tracking outcomes from operations is an important step in optimizing value-based care. The Patient-Reported Outcomes Measurement Information System (PROMIS) was used in this study to measure the achievement of the Minimal Clinically Important Difference (MCID) in outcomes following arthroscopic rotator cuff repair in patients with preexisting cervical spine conditions compared to those without. We hypothesize that compared to individuals without preexisting cervical pathology, those with the comorbidity will exhibit lower absolute values in PROMIS scores. We expect similar improvement and achievement of MCID between the two cohorts.

A retrospective chart review captured PROMIS, demographic, and surgical data, including patient age at the time of surgery, body mass index (BMI kg/m²), gender, insurance status, race, smoking history, and comorbidities assessed through the Charleston Comorbidity Index (CCI). Additionally, conditions related to the cervical spine e.g., stenosis, spondylosis, cervical myelopathy, cervical radiculopathy, cervical disc injury/disease were identified.

Pearson chi-square analysis or Fisher's exact test assessed descriptive features and Minimal Clinically Important Difference (MCID) achievement among the two cohorts. Bivariate student t-test analysis evaluated descriptive differences, such as age, BMI, and PROMIS outcomes. Multivariate logistic regression was applied to understand the role of preexisting C-spine conditions as a predictive feature for MCID achievement. Statistical significance was set at a p-value < 0.05.

RESULTS:

In total, 490 patients were included in the final analysis. Of the 490, 82 patients were identified as having pathology within the cervical spine.

Both cohorts demonstrated significant improvement at the final follow-up compared to their preoperative PROMIS values for Physical Function (PF), Pain Interference (PI), and Depression (Dep), however compared to the control group, patients with preexisting cervical diagnoses had significantly worse (higher) preoperative PI, Dep, and PF (lower) scores (PI (62.6 \pm 6.8 vs 60.1 \pm 6.6, p=0.001), Dep (50.4 \pm 9.8 vs 47.6 \pm 9.8, p=0.004) and PF (39.5 \pm 7.3 vs 42.6 \pm 8.4, p=0.001)), which persisted at final follow-up (PI (53.9 \pm 7.9 vs 50.5 \pm 8.1, p=0.001), Dep (43.3 \pm 9.4 vs 41.1 \pm 7.8, p=0.003), and PF (45.6 \pm 7.6 vs 48.6 \pm 7.9, p=0.001)). There was no significant difference between the two groups for delta PROMIS PI, Dep, or PF (PI (p=0.31), D (p=0.55), PF (p=0.82)).

The differences in PROMIS scores required to achieve MCID were found to be -3.34 for PI, 4.14 for PF, and -4.95 for Dep. No difference was found in the achievement of MCID between patients who had preexisting c-spine conditions compared to the control group. Worse (higher) preoperative PI [OR 1.17; 95CI 1.11-1.22; p=0.001] and Dep [OR 1.13; 95CI 1.10-1.16; p=0.001] scores were associated with a significant increase in odds for achieving the respective MCID. In addition, higher preoperative PF scores (greater preoperative function) were found to be associated with a significant decrease in the odds of reaching MCID PF [OR 0.85; 95CI 0.83-0.88; p=0.001]. DISCUSSION AND CONCLUSION:

The present study showed that both groups had comparably improved PROMIS scores at final follow-up compared to preoperative scores. However, compared with patients with no history of cervical spine conditions, patients with co-occurring cervical pathology had significantly worse PROMIS scores at their preoperative visit and at final follow-up. These results highlight the importance of expectation-setting for patients depending on their preexisting conditions prior to surgery, and the complex nature of shoulder and concomitant cervical spine conditions.

