Incidence and Risk Factors Associated with Anterior Shoulder Pain Following Reverse Total Shoulder Arthroplasty

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INTRODUCTION:

Reverse total shoulder arthroplasty (rTSA) has become one of the most common performed procedures by shoulder surgeons. Like all surgical procedures, it is not without its own unique complications. Prosthetic dislocation, acromial and scapular stress fractures, as well as scapular notching are well known and described following rTSA. Another distinct, yet less recognized complication following rTSA is the development of anterior shoulder pain. This discrete phenomenon is poorly understood with a paucity of literature describing its existence, risk factors, and causes. The purpose of this work is to describe the incidence and associations of anterior shoulder pain following rTSA.

METHODS:

A retrospective chart review of a prospectively maintained research database was performed for all patients undergoing rTSA by two senior authors. All patients were evaluated for the development of anterior shoulder pain following surgery. “Anterior shoulder pain” was defined pain on the anterior shoulder located over the implant, conjoint tendon, subscapularis repair, biceps tenodesis site, or anterior deltoid. Patient height and weight, surgical indications, bicep management, version of the humeral component, inlay vs onlay humeral design, subscapularis management, glenosphere size, total glenoid lateralization, use of glenoid augment, and use of a humeral metallic spacer were all evaluated for association. SAS was employed for evaluation of the variables of interest. Fisher’s exact testing was then used to determine statistical significance.

RESULTS: 1401 patients undergoing rTSA from 2010-2023 were analyzed. Of the 1401 patients, 174 (12.4%) had documented anterior shoulder pain at some time point during post-operative follow-up. Variables that were found to be associated with anterior shoulder pain: torn rotator cuff (p=0.0075), lower weight 185.6 vs 192.8; p=0.041, surgeon A (15.2%) vs B (11.1%); (p=0.036), version of the humeral component 20^{o} (16.0%) vs 30^{o} (11.2%); p=0.0084, inlay (15.8%) vs onlay (11.0%) humeral component; p=0.014, and greater total glenoid lateralization (2.5 vs 1.84mm); p=0.0075.

DISCUSSION AND CONCLUSION:

To our knowledge this is the first work describing the incidence as well as analyzing variables associated with the development of anterior shoulder pain following rTSA. Our data suggests that those patients who had indications for RTSA with deficient rotator cuff, smaller stature, humeral inlay design, lower humeral retroversion, and greater glenoid lateralization may increase the development of anterior shoulder pain. Tenodesis vs tenotomy of the biceps, repair of the subscapularis, and glenosphere size all did not have an impact. Challenges in this study include the subjective nature of anterior shoulder pain as well as the variability in the documentation and description of anterior shoulder pain. Additionally, with a two-surgeon patient database other variables besides those examined here could account for some differences in post-operative course. Further work is needed in this area to continue to improve patient outcomes following total shoulder arthroplasty.