EP.06.245

DO THRESHOLDS OF PREOPERATIVE FUNCTION PREDICT ACHIEVEMENT OF CLINICALLY-IMPORTANT BENCHMARKS OF IMPROVEMENT AFTER ANATOMIC TOTAL SHOULDER ARTHROPLASTY

. O'Keefe [1], K. Hao [1], J. Wright [1], J. King [1], T. Wright [1], J. Elwell [2], B. Schoch [3]
[1] University of Florida, Gainesville, USA
[2] Exactech Inc., Gainesville, USA
[3] Mayo Clinic Jacksonville, Jacksonville, USA

Background: The purpose of this study was to determine if there is a threshold of preoperative function that is predictive of achieving clinically-important success at minimum 2-year follow-up after anatomic total shoulder arthroplasty (aTSA).

Methods: We retrospectively reviewed a multicenter database for patients that underwent primary aTSA. Outcomes evaluated were abduction, forward elevation, external and internal rotation, SST, Constant, ASES, UCLA, SPADI, and SAS scores. Clinically-important benchmarks (CIBs) evaluated include: Minimum Clinically Important Difference (MCID), Substantial Clinical Benefit (SCB), Patient Acceptable Symptomatic State (PASS), and the Minimally- and Substantially-Clinically Important Percent Maximal Possible Improvement (MCI-%MPI and SCI-%MPI); aTSA-specific CIBs were adopted from prior studies. Multivariable logistic regression was first performed to assess whether preoperative outcomes were predictive of achieving CIBs independent of age, sex, and BMI. Next, a ROC analysis was performed to determine the preoperative thresholds predictive of achieving CIBs per the Youden index; identified thresholds were applied to create contingency tables and compared with Fisher's Exact test.

Results: A total of 2,041 aTSAs were included. For all ROM measures, poorer preoperative ROM was associated with greater odds of achieving the MCID and SCB, but lower odds of achieving the PASS ($P<0.001$). More favorable preoperative scores were associated with greater odds of achieving the PASS for all scores, but only for a few scores for other CIBs. Thresholds of preoperative ROM and outcome scores identified on ROC analysis were significant predictors of achieving the MCID, SCB, and PASS for all outcomes ($P<0.001$ for all), but not the MCI-%MPI and SCI-%MPI. For outcome scores, preoperative thresholds that predicted achieving CIBs were lowest for the PASS and highest for the SCB; no trends were identified for ROM. Preoperative ROM thresholds better differentiated whether patients would achieve CIBs compared to outcome score thresholds. Variability in identified thresholds, respective AUCs, and predictiveness of achieving CIBs was minimal when stratified by age and sex.

Conclusions: Preoperative ROM and outcome scores can be utilized to predict the likelihood of achieving absolute CIBs of success (MCID, SCB, PASS) after aTSA, but not the relative CIBs (MCI-%MPI and SCI-%MPI).