EP.06.037

TIMING OF BILATERAL SHOULDER ARTHROPLASTY: ARE EARLY OUTCOMES AFTER FIRST TOTAL SHOULDER ARTHROPLASTY PREDICTIVE OF CONTRALATERAL SUCCESS?

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Background: The ideal timing of bilateral total shoulder arthroplasty (TSA) is unclear. The purpose of this study was to determine whether early outcomes after 1st TSA can be used to predict clinical outcomes after TSA of the contralateral shoulder and to evaluate the ideal time after aTSA to perform the contralateral shoulder.

Methods: A single-institution prospectively-collected shoulder arthroplasty database was reviewed. Patients undergoing bilateral primary anatomic or reverse TSA(aTSA+rTSA) without fracture, tumor, or infection were identified. Included patients had minimum 2-year follow-up on their 2nd TSA and postoperative follow-up after their 1st TSA at 3-months, 6-months, 1-year, or 2-years. Our primary outcome was whether outcome scores and motion at 3-month, 6-month, 1-year, and 2-year follow-up after 1st TSA predicted clinical success after 2nd TSA at final follow-up, defined as achieving the patient acceptable symptomatic state (PASS=the highest level of symptom beyond which patients consider themselves well). Outcomes included the ASES and Constant scores, abduction, forward-elevation, and external/internal-rotation. Multivariable logistic regression determined whether postoperative outcomes after 1st TSA were predictive of achieving the PASS after 2nd TSA independent of age, sex, and BMI. ROC analysis determined cutoffs of postoperative outcomes after 1st TSA at each timepoint that best predicted achieving the prosthesis-specific PASS after 2nd TSA.

Results: We included 134 patients (110 aTSA,158 rTSA). Range of motion and outcome scores at late (1 or 2-year) follow-up after 1st aTSA were more predictive of achieving the 2nd TSA PASS compared to early (3 or 6-month) outcomes. In contrast, outcomes after early and late follow-up after 1st rTSA were similarly predictive of achieving the 2nd TSA PASS. For example, the Constant score threshold at 2-years after 1st aTSA (79.4;AUC=0.804) better-differentiated achieving the 2nd TSA PASS versus the 6-month threshold (72.0;AUC=0.600). In contrast, the Constant score threshold at 2-years after 1st rTSA (76.4; AUC=0.703) was similarly-discriminant of achieving the 2nd TSA PASS compared to the 6-months threshold (65.8;AUC=0.711).

Conclusions: Patients with good outcomes after 1st rTSA can proceed to contralateral TSA as early as 3-months postoperatively with confidence of a similar result on the contralateral side. Success after 1st aTSA does not reliably predict contralateral success until >=1-year.