Anatomic or Reverse Total Shoulder Arthroplasty? How Fellowship Training Affects Selection of Arthroplasty Type

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INTRODUCTION: While both anatomic (ATSA) and reverse total shoulder arthroplasty (RTSA) have been popularized as a means of treating individuals with degenerative shoulder conditions, the indications for each can vary widely amongst providers. While surgeons with differing fellowship training commonly perform these procedures, it is not understood how fellowship training influences choice of implant.

METHODS: A national database was queried to identify surgeons performing anatomic and reverse total shoulder arthroplasty. For all surgeons who performed more than 10 cases between 2010-2022, fellowship data was individually collected via online search. For each fellowship group, rates of anatomic and reverse total shoulder arthroplasty were identified using International Classification of Diseases (ICD) procedural codes. Those undergoing revision arthroplasty and those with a history of fracture, infection, or malignancy were excluded. Primary outcome measures included the proportion of primary and revision ATSA and RTSA by fellowship in addition to the rate of RTSA performed for a primary diagnosis of glenohumeral osteoarthritis.

RESULTS: A total of 131,974 patients met the inclusion criteria and were retained for this study. RTSA increased from 50.1% of all primary shoulder arthroplasty cases in 2011 to 72.0% in 2022. After adjusting for age and comorbidities, Sports Medicine fellowship-trained (Sports) surgeons opted for primary RTSA over ATSA at a significantly higher rate than Shoulder and Elbow fellowship-trained (Shoulder) surgeons and surgeons who completed another type of fellowship or no fellowship (Other). Sports surgeons also chose RTSA more frequently for the diagnosis of glenohumeral osteoarthritis compared to Shoulder surgeons. Surgeons in the Other cohort were more likely to perform primary ATSA rather than RTSA in comparison to surgeons in the Shoulder and Sports cohorts. Sports surgeons were responsible for the greatest increase in percentage of all shoulder arthroplasty procedures from 2010- 2022 (28.4% to 40.4%) while the Other group decreased by a comparable amount (45.9% to 32.4%) over the same period.

DISCUSSION AND CONCLUSION: Surgeons who have completed a Sports Medicine fellowship choose RTSA over ATSA at a higher rate than Shoulder and Elbow surgeons, both for all indications and also for a primary diagnosis of glenohumeral osteoarthritis. Those who have no fellowship training or fellowship training outside of Sports Medicine and Shoulder and Elbow surgery have the highest percentage of ATSA in their arthroplasty practice. Revision anatomic and revision reverse total shoulder arthroplasty represents a larger percentage of overall case volume for Shoulder and Elbow surgeons.

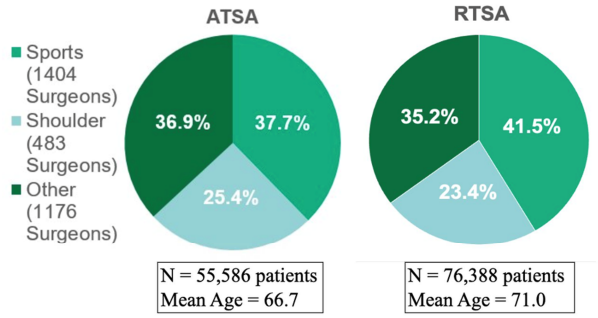

Figure 1. Percentage of TSA Performed by Fellowship Type

Table 1. Arthroplasty Type as a Function of Overall Case Volume According to Specialty

	OR Shoulder: Other	OR Sports: Other	OR Shoulder: Sports	Adjusted OR Shoulder: Other	Adjusted OR Sports: Other	Adjusted OR Shoulder: Sports
Primary ATSA	0.97 p<0.001	0.93 p<0.001	1.05 p<0.001	0.94 p<0.001	0.93 p<0.001	1.01 p<0.001
Primary RTSA	0.94 p<0.001	1.13 p<0.001	0.84 p<0.001	0.99 p=0.459	1.13 p<0.001	0.88 p<0.001
Primary RTSA for GH OA	0.93 p=0.014	1.05 p=0.005	0.89 p<0.001	0.95 p=0.057	1.03 p=0.147	0.91 p<0.001
Revision ATSA	1.27 p<0.001	0.84 p<0.001	1.52 p<0.001	1.22 p<0.001	0.84 p<0.001	1.46 p<0.001
Revision RTSA	1.41 p<0.001	1.15 p<0.001	1.23 p<0.001	1.39 p<0.001	1.21 p<0.001	1.14 p=0.04