

A COMPARISON OF REVISION RATES FOR STEMMED AND STEMLESS PRIMARY ANATOMIC SHOULDER ARTHROPLASTY WITH ALL POLYETHYLENE GLENOID COMPONENTS ANALYSIS FROM A LARGE NATIONAL ARTHROPLASTY REGISTRY

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INTRODUCTION:

We compared the rate of revision of two classes of primary anatomic shoulder arthroplasty, stemmed (aTSA) and stemless (sTSA) undertaken with cemented all polyethylene glenoid components.

METHODS:

A large national arthroplasty registry identified two cohort groups for comparison, aTSA and sTSA between 1st January 2011 and 31st December 2020. A sub-analysis from 1 January 2017 captured additional patient demographics. The cumulative percentage revision (CPR) was determined using Kaplan-Meier estimates of survivorship and hazard ratios (HR) from Cox proportional hazard models adjusted for age and gender.

RESULTS:

Of the 7,533 aTSA procedures, the CPR at 8 years was 5.3%(95% confidence interval (CI) 4.7, 6.0) and for 2,567 sTSA procedures was 4.0%(95% CI 3.1, 5.3). There was no difference in the risk of revision between study groups (HR=0.95(95% CI 0.72, 1.24),p=0.687).

There was an increased risk of revision for aTSA and sTSA undertaken with humeral head sizes <44mm, aTSA 44-50mm vs <44mm (HR=0.66(95% CI 0.48, 0.89),p=0.006); sTSA 44-50mm vs <44mm (HR=0.42(95% CI 0.24, 0.75),p=0.002). Low mean surgeon volume (MSV) (<10 cases per annum) was a revision risk for aTSA (10-20 cases/yr vs <10 cases/yr (HR=0.73(95% CI 0.54, 0.97),p=0.033) but not sTSA 10-20 cases/yr vs <10 cases/yr (HR=1.03(95% CI 0.56, 1.88),p=0.926).

For primary diagnosis osteoarthritis since 2017, low MSV was associated with an increased revision risk for aTSA vs sTSA in the first year (HR=2.50(95% CI 1.01, 6.22),p=0.048). Conversely, low MSV was associated with a decreased revision risk for sTSA in the first 6 months (HR=0.13(95% CI 0.04, 0.38),p<0.001). Predominantly aTSA was revised for loosening (28.8%) and sTSA for instability/dislocation (40.6%).

DISCUSSION AND CONCLUSION: Revision risk of aTSA and sTSA was associated with humeral head size and mean surgeon volume but not patient characteristics. Inexperienced shoulder arthroplasty surgeons experience lower early revision rates with sTSA in the setting of osteoarthritis. Loosening was the most common revision diagnosis for aTSA but not sTSA.