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Does Sex Impact Outcomes Following Shoulder Arthroplasty?

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Summary:
While both males and females undergoing shoulder arthroplasty experience significant clinical improvement, for both TSA and RSA, the magnitude of improvement and final scores in female patients are significantly lower than in male patients. This information can be used to counsel patients undergoing shoulder arthroplasty on their expected outcomes.

Abstract:
Background:
The impact of patient sex as an independent factor on clinical outcomes following total shoulder arthroplasty (TSA) and reverse total shoulder arthroplasty (RSA) is unknown. The purpose of this study was to determine the impact of patient sex on patients undergoing TSA and RSA.
Methods:
A retrospective review of prospectively collected data was performed on 371 patients undergoing TSA (n=232) or RSA (n=139) between 2007 and 2012 with a minimum 2-year follow-up. All patients were evaluated at follow-up with the American Shoulder and Elbow Society (ASES), Simple Shoulder Test (SST), and Visual Analog Scale (VAS) outcomes assessments. For patients undergoing prior shoulder surgery, the number and type of procedure(s) were recorded. Statistical analysis was performed using one-way univariate and multivariate analysis of covariates (ANCOVA/MANCOVA) adjusting for age, Whitney-Mann U tests, and Chi-square or Fisher's exact test, with $P<0.05$ considered significant.
Results:
A total of 195 females (103 TSA, 92 RSA) and 176 males (129 TSA, 47 RSA) were included. Female patients were significantly older at the time of arthroplasty compared to male patients (66.91±10.47 vs. 63.92±9.11 years, $P<0.0001$). At an average follow-up of 52.53±22.22 months, all patients experienced significantly improved ASES, SST, and VAS outcomes scores, regardless of sex ($P<0.05$ for all). Age-adjusted MANCOVA analysis showed that males demonstrated significantly improved outcomes compared to females, including post-operative ASES (81.70±17.97 vs. 73.10±20.83), SST (8.94±2.68 vs. 7.13±3.26), and VAS (1.19±1.79 vs. 1.75±2.33, $P<0.0001$ for all). Males demonstrated significantly greater magnitude of improvement in ASES (42.90±20.56 vs. 39.78±22.50, $P=0.004$) following arthroplasty, but not in SST (4.94±3.93 vs. 4.62±3.53, $P=0.255$) or VAS (-4.27±2.65 vs. -3.98±2.92, $P=0.170$). When stratified by type of surgery, age-adjusted MANCOVA analysis between sexes indicated that males continued to show improved outcomes as compared to females in TSA ($P<0.0001$) and RSA ($P=0.019$) patients.
Conclusions:
While both males and females undergoing shoulder arthroplasty experience significant clinical improvement, for both TSA and RSA, the magnitude of improvement and final scores in female patients are significantly lower than in male patients. This information can be used to counsel patients undergoing shoulder arthroplasty on their expected outcomes.