Is there a Difference in Revision Rates for Matched vs Mismatched Components in Shoulder Arthroplasty? A Shoulder and Elbow Registry Study

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INTRODUCTION:
The off-label use of different shoulder arthroplasty vendors for a given procedure is not uncommon as surgeons might find the humeral component of one company superior and the glenoid component of another company better suited for a specific patient or condition. The outcomes associated with the practice of component mismatching in shoulder arthroplasty have not been well characterized. The purpose of this study is to evaluate the revision rates in patients treated with one part of the implant from one vendor and the other from another (mismatched implants) versus matched implants in both anatomic (aTSA) and reverse (rTSA) shoulder arthroplasties utilizing the Shoulder and Elbow Registry (SER). This study does NOT evaluate components using different radii of curvature also known as “mismatched components.”

METHODS: All primary aTSA and rTSA cases between January 2017 to December of 2022 were analyzed and defined by ICD-9/ICD-10 coding. The following variables were added to the study dataset: age, sex, BMI, and Charlson Comorbidity Index (CCI). Analysis compared linked revision rates between matched vs mismatched components. Linked revisions were defined as those cases with a primary shoulder arthroplasty and an associated revision matching on laterality and side. All SER component information for Medicare-Eligible Patients was merged to Medicare claims data to maximize readmission data. A Kaplan Meier curve was produced.
RESULTS:
Overall, there were no differences in baseline patient characteristics between the matched and mismatched shoulder arthroplasty cohorts. Additionally, there were no linked revisions out of the 98 mismatched component cases that were identified, compared to 44 revisions identified out of the 4,494 matched component cases (0.98%) (p=0.32). A Kaplan-Meier curve showed no significant survival association between matched component status and all-cause linked revision over 4 years (p=0.37).

DISCUSSION AND CONCLUSION:
The off-label use of mismatched glenoid and humeral components in shoulder arthroplasty appears safe in selected patients, as revision rates were lower than in the matched-component cohort. Surgeons should feel free to use their best judgement regarding the best humeral or glenoid component for a particular patient. Additional studies should evaluate the impact of components with different radii of curvature to deepen the understanding of mismatched vs matched components.