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"Evaluation of Humeral Stem and Glenosphere Fixation in Reverse Total Shoulder Arthroplasty: A Prospective, Randomized Clinical Trial with Two-Year Follow-Up"

Reverse total shoulder arthroplasty (RTSA) is rapidly being adopted as the standard procedure for a growing number of shoulder disorders. Though short-term outcomes are promising, mid- and long-term follow-ups present a number of complications – among them, humeral stem and glenosphere component loosening. Though not the primary complication, previously reported loosening required removal and replacement of the implants in 100% of cases. As the number of patients undergoing RTSA increases, especially in the younger population, it is important for surgeons to identify and utilize prostheses with stable long-term fixation.

It has previously been shown in the hip and knee literature that implant migration in the first two years following surgery is predictive of later failure due to loosening in the 5-10-year postoperative window. The purpose of this study is to, for the first time, evaluate the pattern and magnitude of implant migration in reverse total shoulder arthroplasty in the first two years postoperatively using the gold standard imaging technique radiostereometric analysis.

We randomized 39 patients (41 shoulders) to receive either a cemented or press-fit (uncemented) humeral stem, with either a bone graft or porous metal augmented glenosphere. Two years postoperatively, press-fit humeral stems showed increased migration compared to cemented stems, but more importantly they showed good stability from one through two years. Cemented stems showed immediate stability from baseline through two years. These results suggest good long-term fixation for both cemented and press-fit stems. Both methods of glenosphere fixation showed immediate, stable fixation, also suggesting good long-term outcomes. Both stem and glenosphere fixation techniques showed meaningful improvement in range of motion, pain, and function postoperatively. At this time, these results highlight that both cemented and press-fit humeral stems, and glenospheres lateralized with either bone graft or porous metal, have comparable outcomes two years postoperatively.