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HOW DOES PREOPERATIVE SHOULDER FORWARD ELEVATION STIFFNESS INFLUENCE THE RATE OF MOTION RESTORATION AFTER TOTAL SHOULDER ARTHROPLASTY?

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Background: Although both aTSA and rTSA reliably improve pain and function, a subset of patients lag behind their peers in regaining overhead motion. We compared the rate of recovery in motion after aTSA and rTSA in preoperatively stiff (passive forward elevation [FE] <= 105°) versus non-stiff (passive ER > 105°) shoulders.

Methods: A retrospective review of a single-institution shoulder arthroplasty database was performed between 2007 and 2020. We identified 400 aTSAs and 193 rTSAs performed for primary cuff-intact OA with 2-year minimum follow-up that met inclusion criteria. Patients were excluded for preoperative diagnosis of nerve injury, infection, or fracture. Postoperative complications that would affect motion were also eliminated. Included patients at minimum had a follow-up between 1.5-6 months, minimum 2-year follow-up, and a third visit at any timepoint. Our primary outcome was the rate and period of recovery in ROM. Secondarily, strength in ER and FE were assessed.

Results: Non-stiff aTSAs regained ROM faster than stiff aTSAs for abduction (11.1 vs. 9.8 °/month), FE (10.4 vs. 8.3 °/month), IR (0.32 vs. 0.27 points/month), and ER (7.0 vs. 4.7 °/month). However, stiff aTSAs continued to improve over a longer period compared to non-stiff aTSAs for abduction (6.1 vs. 5.7 months), FE (7.8 vs. 6.2 months), IR (8.1 vs. 6.6 months), and ER (6.2 vs. 4.7 months). Non-stiff rTSAs regained ROM faster than stiff rTSAs for active FE (17.3 vs. 16.6°/month) and IR (0.39 vs. 0.30 points/month). However, stiff rTSAs continued to improve over a longer period compared to non-stiff rTSAs for active FE (4.8 vs. 4.4 months) and IR (8.9 vs. 7.2 months). Rate of improvement was similar for abduction (16.4[16.2-16.6] and 16.5[16.2-16.7] °/month) and ER (9.6[9.5-9.7] and 9.8[9.7-10.0] °/month), but duration of improvement was slightly longer for stiff rTSAs for abduction (4.4 vs. 4.1 months) and ER (4.2 vs. 3.9 months). For aTSA and rTSA, strength in ER and FE improved faster in non-stiff shoulders, but over a longer period in stiff shoulders.

Conclusions: Preoperatively stiff versus non-stiff shoulders had a slower rate of recovery over a longer period for all outcomes after aTSA and for FE, IR, and strength after rTSA.