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Subscapularis Repair Enhances Internal Rotation in French but Not Japanese Patients After a Short-typed Curved Stem Reverse Shoulder Arthroplasty

Yoshihiro Hirakawa^{1,2}, Tomoya Manaka², Katsumasa Nakazawa², So Taniguchi¹, Eriki Yanagi², Collin Philippe³, Yoichi Ito⁴, Hidetomi Terai²

orthopaedics, Ishikiriseiki hospital, Japan¹

orthopaedics, Osaka metropolitan university, Japan²

orthopaedics, Clinique Victor Hugo, France³

orthopaedics, Ito clinic, Osaka shoulder center, Japan⁴

Introduction and Background

Reverse shoulder arthroplasty (RSA) has demonstrated excellent outcomes in European populations, particularly in anterior elevation (AE) and functional scores. However, our previous study found that AE and Constant score (CS) improved in both French and Japanese patients undergoing Grammont-style RSA, while external rotation (ER) and internal rotation (IR) showed minimal gains. This study aimed to evaluate whether a short-type curved stem could improve rotational function in both populations.

Material and Method

We retrospectively reviewed 101 French and 187 Japanese shoulders that underwent primary RSA using a short-type curved stem for massive rotator cuff tears, cuff tear arthropathy, or osteoarthritis. Revision cases were excluded. Demographics, range of motion (ROM), CS, and Shoulder Subjective Value (SSV) were assessed at a minimum of 2 years postoperatively. Subgroup analysis was performed based on the presence or absence of subscapularis repair.

Results

The French cohort had significantly greater height, weight, and BMI than the Japanese cohort (all $p < 0.001$). Both groups showed significant improvement in AE, CS, and SSV. However, only the French group demonstrated gains in ER (23° to 29°) and IR (5.3 to 6.0 points), while the Japanese group showed no improvement in ER (25° to 26°) and a decline in IR (5.4 to 3.6 points). Subgroup analysis revealed that subscapularis repair improved IR in French patients but had no meaningful effect in Japanese patients.

Conclusions

The short-type curved stem improved AE and functional outcomes in both populations but failed to restore rotational motion in Japanese patients. Subscapularis repair benefited French patients in terms of IR but was ineffective in the Japanese group. These results suggest that current short-stem designs may be inadequate for enhancing rotational function in smaller-framed Asian populations, highlighting the need for refined implant geometry and lateralization strategies.

