

Reverse Shoulder Arthroplasty Superior To ORIF In The Treatment Of Displaced Proximal Humeral Fractures. 5-Year Follow-Up Of A Multicenter RCT: The DelPhi Trial.

Trauma / Shoulder & Upper Arm Trauma / Surgical Treatment

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Background

Treatment of displaced proximal humeral fractures (PHFs) is still controversial, and operative treatment is increasing despite sparse high-level evidence on which operative treatment to prefer. Two-year results have been previously published. These are the five-year results of a clinical trial comparing reverse total shoulder arthroplasty (RTSA) vs open reduction and internal fixation (ORIF).

Objectives

To conduct a high-level clinical investigation of operative treatment of severely displaced PHFs in the elderly comparing RTSA with ORIF. Our hypothesis was that RTSA yields better clinical results than ORIF with a locking plate.

Study Design & Methods

Multicenter single-blinded RCT comparing RTSA vs ORIF for severely displaced AO/OTA type B2 and C2 PHFs in 124 patients aged 65-85 years. The primary outcome was the Constant score (CS), and secondary outcomes were Oxford Shoulder Score and radiologic measurements. The mean values were compared using independent sample t test. The intention-to-treat principle was applied for crossover patients.

Results

The mean age was 75 years, 90% were female, 104 patients completed two-year follow-up and 65 patients completed five-year follow-up. At five years, RTSA patients had a CS score of 71.7 (95% CI, 67.1 to 76.3) points compared with 58.3 (95% CI, 50.6 to 65.9) points in the ORIF group, a significant

mean difference CS of 13.5 (95%CI, 5.2 to 21.7, $p < 0.001$) points in favor of RTSA.

When stratified by fracture type, patients with type C2 PHFs receiving RTSA scored a mean CS of 73.3 (95% CI, 67.5 to 79.2) points, while patients with ORIF scored a mean CS of 56.0 (95% CI, 47.4 to 64.7) points, a significant mean difference of 17.3 (95% CI, 7.5 to 27.0, $p = 0.001$) points in favor of RTSA.

Stratified by age, patients 65 to 74 years treated with RTSA had a mean CS of 74.0 (95% CI, 67.8 to 80.5) points compared with 58.3 (95% CI, 48.6 to 60.1) points in the ORIF group, a significant mean difference of 15.8 (95% CI, 4.9 to 26.7, $p = 0.006$) points in favor of RTSA.

The number of adverse events over five years were 12 for RTSA and 17 for ORIF, and there were 6 secondary surgeries in the RTSA group, and 11 secondary surgeries in the ORIF group.

Conclusions

RTSA is superior to ORIF for severely displaced AO/OTA type B2 and C2 PHFs in elderly patients at five years. Patients aged 65-74 years and patients with C2 fractures profit the most.