

Reverse Total Shoulder Arthroplasty Superior at Five Years compared with Plate Fixation for Displaced Proximal Humeral Fractures in the Elderly: A Randomized Controlled Trial, The DelPhi Trial

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INTRODUCTION: Treatment of displaced proximal humeral fractures is still controversial, and operative treatment is increasing despite sparse evidence on which method to prefer. We show mid-term results of a clinical trial comparing reverse arthroplasty vs. plate fixation.

METHODS: Multicenter single-blinded randomized controlled trial comparing reverse arthroplasty vs. plate fixation for severely displaced AO/OTA type B2 and C2 proximal humeral fractures in 124 patients aged 65-85 years. The primary outcome was the Constant score, and secondary outcomes were Oxford Shoulder Score and radiologic measurements. The mean outcomes were compared using independent sample t test, and linear mixed model analyses were used for subgroup analyses.

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. Reverse arthroplasty patients had a mean Constant score of 71.7 (SD=14.2) at five years, compared with 58.3 (SD=19.0) in the plate fixation group: a significant mean difference of 13.5 (95% CI: 5.2, 21.7, p=0.002) in favor of reverse arthroplasty. Type C2 fractures scored 69.7 (95%CI: 63.4, 76.1) in the reverse arthroplasty group and 52.3 (95%CI: 44.5, 60.1) in the plate fixation group, a significant mean difference of 17.5 (95%CI: 7.4, 27.5, p=0.001) in favor of reverse arthroplasty. Patients 65-74 years with reverse arthroplasty had a mean Constant score of 73.5 (95%CI: 66.4, 80.7), compared with 62.5 (95%CI: 55.5, 70.0) for plate fixation, a significant mean difference of 11 (95%CI: 1.0, 21.0, p=0.03) in favor of reverse arthroplasty.

DISCUSSION AND CONCLUSION:

Reverse shoulder arthroplasty is superior to plate fixation for severely displaced AO/OTA type B2 and C2 fractures in elderly patients at five years. Patients aged 65-74 years and patients with C2 fractures profit the most.