

## **Reverse or Nothing for Complex Proximal Humeral Fractures: Results of a Multicentric, Prospective Randomized Control Trial**

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### **INTRODUCTION:**

The benefits of reverse shoulder arthroplasty (RSA) over nonsurgical treatment for patients presenting complex proximal fracture treatment are sparsely explored. The aim of the present study is to evaluate the functional results of surgical treatment by reverse shoulder arthroplasty compared with nonsurgical treatment for patients presenting displaced proximal humeral fractures.

### **METHODS:**

A multicentric prospective randomized control trial was conducted, enrolling patients over 70 yo sustaining an acute complex proximal humeral fracture (3 or 4 parts), within the first 3 weeks after injury, with no previous condition nor surgery on the affected shoulder. Patients with dementia, not amenable to a rehabilitation program, or with no contact on humeral head/shaft relationship were excluded. Patients were randomly assigned to the intervention group (implantation of a reverse shoulder arthroplasty and tuberosities reattachment) or the control group (nonsurgical treatment). Functional outcome was assessed using the Constant-Murley Score (CS) at 1-year follow up. Complications and reinterventions were considered secondary outcomes. The power of the study was calculated to detect minimal clinically important difference for the Constant-Murley Score, assuming a drop-out rate of 20%. Thus, a total of 81 patients were needed to be enrolled in the study. Analysis was done as per intention to treat (Clinical Trials registry identifier: [NCT03610113](https://clinicaltrials.gov/ct2/show/study/NCT03610113)).

### **RESULTS:**

Sixty-six patients completed the 1-year follow-up evaluation. There were no significant differences between both groups according to age (p0.43), gender (p0.72), and type of fracture according to Neer's classification system (p0.06).

At 1-year follow up, the group assigned to intervention obtained higher functional outcomes compared to the nonsurgical treatment group (mean CS; 61.24, SD: 13.33 versus mean CS: 52.44, SD:16.22). The confidence interval for the difference is 8.84, 95% CI [1.57, 16.11]. Two patients in the intervention group (6.5%) presented major complications (periprosthetic joint infection and axillar nerve palsy). No major complications were observed in the nonsurgical group. One patient in the intervention group received secondary surgery for a periprosthetic joint infection, while no reinterventions were observed in the nonsurgical group at 1-year follow up.

### **DISCUSSION AND CONCLUSION:**

The benefit of RSA for the treatment of complex proximal humeral fractures is limited and probably not perceived by the patients.