

Locking plate and cemented screws versus reverse shoulder arthroplasty in complex proximal humerus fracture in elderly population: a retrospective comparative cohort study

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INTRODUCTION:

Due to the high complication rate associated with open reduction and internal fixation (ORIF) of complex proximal humerus fractures in the elderly population, many authors consider reverse shoulder arthroplasty (RSA) as the treatment of choice. However, the use of cemented screws seems to decrease the rate of implant related complications. The aim of the study was to compare the clinical and radiological outcomes, as well as the complication rate, of patients over 65 years old with complex proximal humerus fractures treated with locked plating and cemented screws versus those treated with reverse shoulder prosthesis.

METHODS:

Retrospective comparative cohort study performed between 2014 and 2023 of patients over 65 years old with complex proximal humerus fractures treated at the same institution either with locked plating and cemented screws (Group-1) or reverse shoulder prosthesis (Group-2) (Delta Xtend, DePuy Synthes). Exclusion criteria included patients with less than one year of follow-up, neurological injuries, pathological fractures, or open fractures. Fractures were classified according to Mayo-FJD Classification. Clinical follow-up was conducted at 3, 6, and 12 months, and annually thereafter. Patient demographics, range of motion, Constant Score(CS) and complications were analyzed. The average follow-up was 24 (± 10) months. A p-value of <0.05 was considered statistically significant.

RESULTS:

A total of 178 patients were included: 98 (55.1%) patients in Group-1 and 80(44.9%) patients in Group-2. The mean age was 74 years (± 12), 89% were female and 51% had dominant side affected. Both groups were comparable in terms of patient demographics and fracture pattern.

At the end of follow-up, patients in Group-1 showed better external rotation (51 ± 21 versus 29 ± 18 , $p < 0.001$), internal rotation ($p < 0.001$) and CS (82 ± 9 versus 78 ± 10 , $p = 0.052$) compared to patients in Group-2. Patients in Group-2 achieved better forward elevation (142 ± 26 versus 136 ± 30 , $p = 0.32$) although these differences were not statistically significant. The rate of complications (10% Group-1 and 18% Group-2, $p = 0.174$) and rate of revision surgery (7.5% Group-2 and 13% Group-1, $P = 0.234$) were lower in Group-2 although these differences were not statistically significant. The most common complication in Group-1 was avascular necrosis affecting 14/98 (14%) patients and the fracture pattern associated most frequently with avascular necrosis was Disengaged Neck Fractures (9/14). The most common complications in Group-2 were infection affecting 3/80 (3.7%) patients and axillar nerve neuropathy affecting 3/80 (3.5%) patients.

DISCUSSION AND CONCLUSION: In complex proximal humerus fracture in elderly population, both ORIF with cemented screws, as well as RSA, offer good clinical outcomes and a low complication rate. ORIF with cemented screws results in better range of motion and Constant Score, while arthroplasty provides a lower complication and revision surgery rate.