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Comparison of functional outcomes between reverse total shoulder arthroplasty and angular-stable plating for proximal humeral fractures in elderly patients

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Introduction and Background

Surgical treatment for displaced proximal humeral fractures in elderly is a controversial issue. Apart from open reduction and internal fixation (ORIF), reverse total shoulder arthroplasty (RTSA) is also the operative solutions which has gained more popularity. The purpose of this study is to compare functional outcomes of RTSA and ORIF with angular stable plate in elderly throughout a 2-year follow-up period.

Material and Method

We retrospectively evaluated the elderly patients (60 years and above) who underwent RTSA or ORIF with angular-stable plate for displaced proximal humeral fractures (Neer 3- and 4- part) at department of orthopaedics, Phramongkutklao hospital. The functional outcomes were assessed at 3-month, 6-month, 12-month, 18-month, and 24-month follow-up intervals. The Constant score, visual analog scale (VAS), American shoulder elbow surgery score (ASESS), Shoulder pain and disability index (SPADI), range of motion and radiographs were recorded.

Results

There were 64 patients included in the study: 32 RTSA and 32 ORIF. The average age at trauma was 75 years. Within 2 year follow-up period, RTSA patients had significantly higher mean active forward flexion with the mean difference of 9.74 degrees (95% CI, 3.96 to 15.52 degrees; $p < 0.001$). VAS was significantly decreased in RTSA group with the mean difference of 0.62 points (95% CI, 0.83 to 0.41 points; $p < 0.001$). At the 3-month follow-up, patients treated with ORIF had considerably gained more active internal rotation ($p = 0.005$). No apparent mean difference between these two groups were seen from CSS, ASESS, SPADI and active external rotation.

Conclusions

Within 2 years of following up, both RTSA and ORIF with angular-stable plate showed favorable clinical outcomes and fewer complications. Although surgical treatment for displaced proximal humeral fractures in the elderly is still under debate, our study shows that RTSA provided superior forward flexion and RTSA patients experienced significantly less pain earlier than ORIF patients.