Surgery with Locking Plate or Hemiarthroplasty versus Nonoperative Treatment of 3- and 4-Part Proximal Humerus Fractures in Patients Aged 60 Years and Older: A Randomized Clinical Trial

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Purpose: The incidence of proximal humeral fractures has shown to be the highest in the ≥60-year-old female population. Operative treatment of proximal humeral fractures in the older patients is common. However, evidence of its efficacy is uncertain. We aimed to assess whether operative treatment with locking plate or hemiarthroplasty yields better functional outcome than nonoperative treatment of displaced 3- and 4-part proximal humeral fractures among patients aged 60 years or more.

Methods: We conducted a multinational, multicenter, randomized control trial of 160 patients, ≥60-year-old with a displaced (displacement of more than 1 cm or 45°) 3- or 4-part proximal humerus fracture. Patients were randomized to nonoperative or operative treatment with either a locking plate or hemiarthroplasty using a random number matrix in an age-dependent block allocation fashion. A physiotherapist, blinded to the treatment, performed a research examination at 6 months, 1 year, and 2 years. The primary outcome measure was the Disabilities of the Arm, Shoulder and Hand (DASH) score and the secondary outcome measures included the Oxford Shoulder Score (OSS), visual analog scale (VAS), Constant-Murley Shoulder Score, EuroQol-5D (EQ-5D) value, and 15D quality of life questionnaire. Our hypothesis was that operative treatment of displaced 3- and 4-part proximal humerus fractures with a locking plate or hemiarthroplasty would achieve better functional outcome and patient satisfaction compared to nonoperative treatment in terms of the DASH.

Results: Recruitment was completed on December 2019 and all included patients completed 2-year follow-up by December 2021. A total of 160 patients were recruited with 106 patients randomized to operative treatments and 54 patients to nonoperative treatment. Results will be analyzed and the presentation is offered to be in the 2023 OTA Annual Meeting.

Conclusion: Consensus on the optimal treatment method for 3- and 4-part proximal humerus fracture in older patients has been weak and the debate is continued. This is the first trial to compare operative treatment with locking plate or hemiarthroplasty and nonoperative treatment with early mobilization for displaced 3- and 4-part proximal humerus fractures in patients aged 60 years or more.