

Comparison of Olecranon Osteotomy with an Olecranon-Sparing Technique for Fixation of Geriatric Intra-Articular Distal Humerus Fractures:

The Enhanced Bag of Bones

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Purpose: Intra-articular distal humerus fractures (IADHFs) are disabling injuries and difficult to treat in the elderly population. Nonoperative treatment, also referred to as the “bag of bones” (BoB), has been associated with poor functional results and unreliable pain relief but avoids the complications of surgery and prolonged hospital stays. Common surgical treatments for IADHFs include open reduction and internal fixation (ORIF) with olecranon osteotomy (OcO) and total elbow arthroplasty (TEA). The outcomes of a more limited ORIF without OcO or anatomic joint reduction and fixation referred to as the “enhanced bag of bones” (EBoB) has not been formally compared to the traditional ORIF of the distal humerus (ORIF + OcO). We hypothesized there would be no difference in pain scores or clinical outcomes in elderly patients treated with ORIF + OcO compared to those who underwent the EBoB technique.

Methods: 56 elderly patients (≥ 65 years old) with IADHFs, classified as AO humeral 13-C type fractures, who underwent surgical fixation with at least 12 months of follow-up were retrospectively reviewed. 30 patients were treated with ORIF + OcO and 26 patients were treated with the EBoB technique. Patients in the EBoB group typically underwent single or dual distal humerus columnar plating without anatomic joint reduction and fixation. The primary outcomes of this study were final elbow range of motion (in the coronal plane), complications, and the need for additional elbow surgery. Secondary outcomes included patient-reported outcome measurement tools for pain and function.

Results: The average final elbow range of motion in the coronal plane was 97° (range, 40° - 155°) in the ORIF + OcO and 86.5° (20° - 145°) in the EBoB group ($P = 0.2313$) at the time of final follow-up. The average final elbow extension (degrees short of full extension) was 22.5° (0° - 45°) and 26.9° (0° - 90°) in the ORIF + OcO and EBoB groups, respectively ($P = 0.5389$). In the ORIF + OcO group there were 11 complications in the follow-up period and 10 patients underwent additional surgery. In the EBoB group there were 4 complications in the follow-up period and 4 patients underwent additional surgery. There was a trend to more complications ($P = 0.0728$) and additional surgery ($P = 0.1218$) in the ORIF + OcO group. PROMIS (Patient-Reported Outcomes Measurement Information System) scores for pain were 53.1 and 52.14 in the ORIF + OcO and EBoB and groups, respectively ($P = 0.8668$) and PROMIS function scores were 41.7 and 41.4, respectively ($P = 0.9569$).

The average operative time was 168 minutes and 138 minutes in the ORIF + OcO and EBoB groups, respectively ($P = 0.0406$).

Conclusion: Treatment with the EBoB technique demonstrated equivalent outcomes with regards to range of motion, function, and pain in elderly patients with IADHFs compared to the traditional ORIF + OcO. Surgical times were longer in the ORIF + OcO group with a trend toward more complications and need for additional surgery. The EBoB technique should be strongly considered in the treatment algorithm of elderly patients with IADHFs.

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