

## **Olecranon Osteotomy Fixation Following Complex Distal Humerus ORIF: Plate or Tension Band?**

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**Purpose:** Distal humeral fractures in adults are complex and technically demanding injuries to manage. Operative intervention is indicated in most cases and is often complicated by difficult exposure, osteoporotic bone, and comminution in the metaphyseal and /or articular region. There is controversy regarding a number of issues pertaining to the management of distal humeral fractures, including the correct operative approach, fixation strategies, the role of total elbow arthroplasty, management of the ulnar nerve, and indications for prophylaxis against heterotopic ossification. A transolecranon approach allows for improved visualization and more accurate reduction for the complex fractures of distal humerus. However, there is still a controversy for the internal fixation of olecranon osteotomy following the open reduction and internal fixation (ORIF) of complex distal humerus fractures. The purpose of this study is to discuss these 2 methods of olecranon repair following olecranon osteotomy in the ORIF of distal humerus fractures.

**Methods:** This was a retrospective study of distal humerus fractures treated through an olecranon osteotomy approach. All cases with the olecranon osteotomy were fixed with either plate fixation or tension band. According to the comprehensive imaging examinations (radiographs and CT scan), careful analysis and accurate assessment for complex fractures of distal humerus were performed for all patients, and treatment strategy was decided meanwhile. Measured outcomes included the range of motion, healing time of olecranon osteotomy, and development of complications. Mayo Elbow Performance Index (MEPI) scores were obtained for all patients.

**Results:** 119 cases of complex fractures of distal humerus from June 2012 to June 2017 were identified and included a total of 81 eligible patients with OTA type 13-C2 or 13-C3 fractures. There were 43 males and 38 females with the average age of 42.6 years (range, 21-63). According to AO/OTA classification, there were 36 type 13-C2 cases, and 45 type 13-C3. 39 patients had fixation of the olecranon osteotomy with tension band, and 42 were fixed with plate fixation. All of the 81 cases were followed for an average time of 28.6 months (range, 24-40 months). Groups did not differ with respect to any preoperative characteristic. Clinically there were no significant differences in healing time of olecranon osteotomy, range of motion at any time point, complications related to the osteotomy, or patient MEPI scores.

**Conclusion:** Plate fixation and tension band of olecranon osteotomy following ORIF of complex distal humerus with a transolecranon approach had similar outcomes. Therefore, the acquainted surgical intervention and the cost difference of each modality should be considered by orthopaedic surgeons when repairing the olecranon.