Paratricipital Approach Compared to Olecranon Osteotomy Approach for Bicondylar Intraarticular Distal Humerus Fractures: Are the Quality of Reduction and Outcomes Compromised?

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Purpose: There is concern that the quality of reduction and outcomes of intra-articular bicondylar distal humerus fractures (AO/OTA type 13C) treated with a paratricipital (PT) approach is inferior to that of an olecranon osteotomy (OO) approach. The aim of this study was to compare the PT and OO approaches in terms of reduction quality, functional outcomes, and complications.

Methods: 77 patients with AO/OTA type 13C fractures who underwent either a PT or OO approach were identified. Of these, 53 patients (PT: n = 23; OO: n = 30) were retrospectively contacted for a mean follow-up of 4.7 years (range, 5.5 months to 14.7 years). All radiographs in the immediate postoperative period and at final follow-up were assessed for quality of reduction by measuring the articular step-off, the articular gap, and sagittal and coronal alignment. Range of motion, Mayo Elbow Performance Score (MEPS), complications, and reoperations were compared between PT and OO groups.

Results: On immediate postoperative radiographs, there was no difference in the amount of articular step-off or articular gap between groups (P = 0.695 and 0.235, respectively). No patient in either group had an articular malreduction more than 2 mm. A malreduction was present in 17% of PT patients and 21% of OO patients (P = 0.636). The quality of reduction was maintained at fracture union. No difference in range of motion (P = 0.440) or MEPS (P = 0.444) was also observed between groups even when stratifying by C1, C2, and C3 fracture types. 30% of patients in the PT group experienced a complication compared to 43% patients in the OO group (P = 0.337).

Conclusion: The quality of reduction in intra-articular bicondylar distal humerus fractures, including type C3, is not compromised with the PT approach compared to the OO approach. Elbow range of motion, patient-reported outcome measures, and complication rates were also similar between approaches. However, if visualization and reduction cannot be obtained within a reasonable time after exposure with a PT approach, the approach should be converted to an OO approach.