Δ Simple Decompression versus Anterior Transposition of the Ulnar Nerve: 2-Year Follow-up of a Randomized Trial

***Emil H. Schemitsch, MD**; Gurrattan Chandhoke; Christine Schemitsch; Niloofar Dehghan, FRCSC, MD, MSc; Milena Vicente, RN; Aaron Nauth, MD; Jeremy Hall, MD, FRCS (ORTHO), MEd; Michael D. McKee, MD, FRCSC;*
Canadian Orthopaedic Trauma Society (COTS)
St. Michael's Hospital, Toronto, ON, Canada

Purpose: Ulnar nerve dysfunction is common after operative fixation of distal humerus fractures. A previously presented prospective randomized trial comparing ulnar nerve simple decompression (SD) to anterior transposition (AT) after bicolumnar plate fixation of acute distal humerus fractures was unable to demonstrate any significant difference in outcome at 1 year. We present here the 2-year follow-up results for that study.

Methods: Participants who were between 16 and 80 years of age, sustaining a displaced, distal humerus fracture (OTA 13A or 13C), and ≤28 days postinjury with a closed or grade I/II open fracture were included. Participants were randomized to receive either SD or AT of the ulnar nerve, with a similar postoperative protocol. The primary outcome was the ulnar nerve entrapment score of Gabel and Amadio. Secondary outcomes included: Mayo Elbow Performance score (MEPS), Short Form (SF)-36 PCS (Physical Component Summary) and MCS (Mental Component Summary), grip and pinch strength, Jebsen hand function test, nerve conduction test, and the visual analog scale (VAS). Follow-up appointments occurred until 2 years postoperatively.

Results: Of the 61 patients enrolled in the study, 27 were randomized to AT, 31 to SD, and 3 withdrew preoperatively. There were 35 females and 23 males with a mean age of 52.7 years. There were no differences in the ulnar nerve entrapment scores, MEPS, SF-36 PCS and MCS, VAS, or 2-point discrimination scores between treatment groups from baseline to any time point. Both groups did show significant improvement over time.
Between 1 and 2 years postoperatively, the mean ulnar nerve entrapment scores, MEPS, VAS satisfaction, and moving 2-point discrimination scores did not significantly improve. From baseline to 2 years, moving 2-point discrimination scores significantly improved from 8.83 mm to 5.81 mm, but remained abnormal. By the 2-year follow-up, general health outcome scores were similar to preinjury scores for both the SF-36 PCS and MCS. At the end of the follow-up period, there were 11 revision surgeries, 5 superficial infections, 2 deep infections, and 4 nonunions. Complications were equal across groups.

Conclusion: At 2-year follow-up, SD and AT were shown to be equally effective methods for displaced, distal humerus fractures treated with plate fixation. Both treatment methods demonstrated significant improvement in all outcome measures over time with similar rates of complications, ulnar nerve symptoms, and functional outcomes. No outcome measure significantly changed from 1 to 2 years postoperatively. At 2-year follow-up, there continued to be residual ulnar nerve dysfunction in both groups despite recovery of general health outcome scores.

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