

Outcome After Treatment of Elbow Stiffness Following Bicolunar Fixation of Distal Humeral Fractures

Christine Schemitsch; Brian Seeto; Luc Rubinger; Milena (Lynn) Vicente;

Emil H. Schemitsch, MD; Michael D. McKee, MD¹

¹St Michael's Hospital, Toronto, Ontario, CANADA

Purpose: Intra-articular fractures of the distal humerus are typically treated with bicolunar plate fixation. Despite prompt and accurate reduction and fixation, many patients have postoperative complications of stiffness, hardware prominence, and ulnar neuropathy. Such patients often undergo subsequent elbow release and hardware removal. The purpose of this study was to determine the indications, technique, and outcomes of this reconstructive procedure.

Methods: Patients who had undergone an elbow release with hardware removal by a single surgeon following bicolunar fixation of an intra-articular fracture of the distal humerus were identified. Patients were contacted to participate in a chart review, and to return for a follow-up visit. Patients who returned for a follow-up visit completed the DASH (Disabilities of the Arm, Shoulder and Hand) and the MEPS (Mayo Elbow Performance Score).

Results: 50 patients were included in the final analysis. The mean age of patients at the time of the elbow release was 44.3 years, the average time from the original injury to the time of release was 18.4 months, and 52% of the patients were male. Stiffness was the most common indication for operative intervention (n = 41), followed by hardware prominence (n = 22), ulnar neuropathy (n = 21), and heterotopic ossification (n = 9). In 45 patients (90%), both plates were removed, and in 5 patients (10%) only 1 plate was removed. There was a statistically significant improvement in the flexion-extension arc measured prior to the elbow release and hardware removal (mean = 64°), and measured at the last follow-up (mean = 93°), P < 0.001. 15 patients completed the DASH questionnaire and the mean score was 21 (SD = 19). The mean value for the MEPS was 82 (SD = 16), indicating good function of the elbow. Complications included posttraumatic osteoarthritis (n = 27), ulnar neuropathy (n = 12), and heterotopic ossification (n = 11). There were 4 reoperations (8%): 2 patients had a revision release of contracture and 2 patients underwent a closed manipulation. One patient underwent a total elbow arthroplasty (TEA), and one patient sustained a refracture of the distal humerus.

Conclusion: It is safe to re-intervene relatively early, and in general removal of both plates is recommended. There is a modest but consistent improvement in flexion-extension arc, and the reoperation rate is low. Although there is a high rate of posttraumatic arthritic change, TEA was rare, and elbow-based outcome scores were good, although not normal.