Corrective Osteotomy for Combined Intra- and Extra-Articular Distal Radius Malunion

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Purpose: This study evaluated the functional outcome of corrective osteotomy for combined intra- and extra-articular malunions of the distal radius using multiple outcome scores.

Methods: 18 skeletally mature patients were evaluated at an average of 78 months after corrective osteotomy for a combined intra- and extra-articular malunion of the distal part of the radius. The indication for osteotomy in all patients was the combination of an extra-articular deformity (≥15° volar or ≥10° dorsal angulation or ≥3 mm radial shortening) and intra-articular incongruity of ≥2 mm (maximum step-off or gap) as measured on lateral and posteroanterior radiographs.The average interval from the injury to the osteotomy was 9 months. The average maximum step-off or gap of the articular surface prior to surgery was 4 mm.

Results: All 18 patients healed uneventfully and the final articular incongruity was reduced to 2 mm or less. Final range of motion and grip strength significantly improved ($P < 0.05$), averaging 89% and 84% of the uninjured side, and 185% and 241% of the preoperative measures, respectively. The rate of excellent or good results was 72% according to the validated rating system Mayo Modified Wrist Score, and 89% according to the unvalidated system of Gartland and Werley. The mean Disabilities of the Arm, Shoulder and Hand (DASH) score was 11, which corresponds to mild perceived disability. 11 of the 18 cases normalized their upper limb function. Four patients had complications that were successfully treated. According to the rating system of Knirk and Jupiter, four had a Grade 1 and one had a Grade 2 osteoarthritis of the radiocarpal joint on radiographs. Only two of these patients reported occasional mild pain. Radiographic osteoarthritis did not correlate with strength, motion and wrist scores.

Conclusion: Outcomes of corrective osteotomy for combined intra- and extra-articular malunions are comparable to those of osteotomy for isolated intra- and extra-articular malunions. If carefully planned, a corrective osteotomy for the treatment of complex intra- and extra-articular distal radius malunions can improve wrist function.

Current Faculty and Residents

28th Annual Meeting of The Orthopaedic Trauma Association
October 3-6, 2012, Minneapolis, MN