

Growth Disturbance Following Intraarticular Distal Radius Fractures in the Skeletally-Immature Patient

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Introduction: The purpose of this study was to define the incidence of growth disturbance following intraarticular distal radius fractures in the skeletally immature and assess radiographic and functional outcomes.

Methods: A retrospective investigation of all pediatric patients with intraarticular distal radius fractures over a five year period at a single institution was performed. Fractures in skeletally-immature patients and pathologic fractures were excluded. Twenty-nine patients with a mean age of 13.9 years and mean follow-up of 17.7 months met the inclusion criteria. Fractures were categorized according to the Salter-Harris classification and all radiographs were assessed for evidence of physeal disturbance. Information regarding treatment and early clinical results were obtained from medical record review. Functional outcomes using the Disabilities of the Arm, Shoulder, and Hand (DASH) and Modified Mayo Wrist Score (MMWS) were collected. Fisher's exact test was used to compare incidence of physeal arrest in the study population to previously published rates of physeal arrest in fractures involving the distal radius.^{1,2} The Mann-Whitney-Wilcoxon test was to compare those who did and did not develop physeal arrest.

Results: Of the 29 patients, 9 (31%) sustained Salter-Harris III fractures and 20 (69%) sustained Salter-Harris IV fractures. Growth disturbance occurred in 12 (41%) patients. All children age 10 years or younger had growth arrests that underwent subsequent procedures to address deformity. By DASH and MMWS, all patients had minimal disability and excellent functional outcomes after final treatments.

Conclusion: Intraarticular distal radius fractures in skeletally-immature patients have a considerably higher rate of physeal growth arrest than extraarticular physeal fractures.^{1,2} The treating surgeon should make an aggressive effort to restore/preserve anatomic physeal alignment. Follow-up radiographs should be obtained to evaluate for physeal arrest in this cohort. Patients and families should be counseled regarding the high rate of growth disturbance and the potential need for deformity correction in the future, particularly in younger children.

Level of Evidence: IV – Case Series

Citations

1. Mizuta T, Benson WM, Foster BK, et al. Statistical analysis of the incidence of physeal injuries. *J Pediatr Orthop.* 1987; 7:518-523.

2. Cannata G, De Maio F, Mancini F, Ippolito E. Physeal Fractures of the Distal Radius and Ulna: Long-Term Prognosis. *J Orthop Trauma.* 2003; 17(3): 172-179.