Correction of Forearm Deformity after Distal Physeal Arrest of the Radius/ulna with Distraction Osteogenesis.

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Methods: Retrospective review of a single surgeon's experience using a circular External Fixator to correct forearm deformity in eight patients whose average age at time of application was 10.7 years.

At time of lengthening, the ulnar physis was left intact allowing its growth in all patients except one.

After skeletal maturity, seven patients underwent to a second acute lengthening procedure to restore radial/ulnar relation. All patients were evaluated clinically with radiographs, physical examination, and functional outcome assessments including the Short-Form 12, Disabilities of the Arm, Shoulder and Hand, and Mayo Wrist score.

Results: At the time of long-term follow-up, at a mean of 120 months, all patients were nearly pain free. All were willing to undergo the same treatment again. Wrist flexion increased 15°, extension decreased 4°, radial deviation decreased 10°, ulnar deviation increased 12°, and pronation and supination both decreased 7° on average. The radius was lengthened an average of 18 mm, with an average preoperative ulnar variance of +15 mm and an average postoperative ulnar variance of -3 mm. Mean outcome scores were as follows: Short-Form 12 was 84, Disabilities of the Arm, Shoulder and Hand was 10, and Mayo Wrist was 76. No complications were observed.

Conclusions: The use of distraction osteogenesis in pediatric patients with severe forearm deformity and dysfunction after physeal arrest in the setting of trauma is a reasonable alternative in association to a later osteotomy, bone grafting, and internal fixation. It provides good correction of deformity (cosmetic aspect) and maintains functional range of motion.