Dynamic Splinting for Pediatric Contracture Reduction of the Upper Limb: a Case Report

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Abstract

Background: This report is based on a case of "shaken baby syndrome," and clinical manifestation of this injury often include hypertonicity, spasticity, and joint contracture. Shaken baby syndrome affects over 1 million children and resembles symptoms of traumatic brain injury.

Methods: The patient was a 5-year-old male, who had suffered a traumatic brain injury with right spastic hemiplegia. Over the course of treatment, multiple modalities were used to manage his tone, spasticity and to reduce wrist and elbow contractures which included Botox®, manual therapy, and dynamic splinting as home therapy. The main outcome in this report includes changes in maximal range of motion(s) in the elbow and wrist.

Results: After dynamic splinting was initiated, the child's passive range of motion increased by 65 degrees in wrist extension and 45 degrees in elbow extension. Ulnar deviation progressed by 15-30 degrees.

Conclusion: Dynamic splinting contributed over 900 hours of end-range, home therapy for wrist extension and 700 hours in end-range home therapy for elbow extension. It is hypothesized that this prolonged duration of passive stretching at the end-range is responsible for the substantial gains in range of motion.

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