Acute Cast Immobilization of Pediatric and Adolescent Forearm Fractures - Is it Safe?

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INTRODUCTION: Acute forearm fractures of the radius and ulna are common within the pediatric and adolescent populations, however, there is not a standardized treatment protocol for these fractures. Many providers place splints or casts and subsequently bivalve them due to concerns regarding swelling. The purpose of this study was to evaluate the outcomes and safety of acute casting of these fractures.

METHODS: A retrospective review was performed over a 10-year period for patients under the age of 17 who had been treated for an isolated radial shaft fracture, isolated ulnar shaft fracture, or both bone forearm fracture (BBFA). Data collected included patient demographics, mechanism of injury, mode of immobilization, reduction parameters, and complications.

RESULTS: Seven-hundred patients were identified ranging from 7 months to 17 years of age (mean: 7.02 ± 3.75 years). Of the 700 participants, 87.14% (N=610) sustained BBFA fractures, 9% (N=63) sustained isolated radial shaft fractures, and 3.86% (N=27) sustained isolated ulnar shaft fractures. A total of 45.14% of patients had a closed reduction performed. During their initial encounter, 35.86% of patients were placed into a cast and 58.71% were placed into a sugar-tong splint. Of the casts applied, 87.85% were long arm casts that were not bivalved, 8.1% were long arm casts that were bivalved, and 4.05% were short arm casts that were not bivalved. Two patients returned to the emergency department to have their cast bivalved. There were no incidents of compartment syndrome or lasting neurovascular injury across the 700 participants.

DISCUSSION AND CONCLUSION: This series supports the acute application of long arm casts in pediatric and adolescent forearm fractures without the need for bivalving the cast. Avoidance of bivalving a cast, particularly when the patient is under sedation, obviously eliminates the potential for cast saw injuries when one is bivalving a cast.