Safety and Efficacy of Waterproof Mehta Casting for Early Onset Scoliosis

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INTRODUCTION: Multiple studies have demonstrated the efficacy of traditional Mehta casting in the treatment of early onset scoliosis (EOS). However, the use of waterproof Mehta casting has not been previously described. Inherent advantages of waterproof casting include clearance for bathing/swimming, avoiding cast holidays, and improved family satisfaction. The purpose of this study was to assess the safety and efficacy of waterproof serial Mehta casting at controlling curve progression in EOS.

METHODS: The current study is an IRB approved Level IV retrospective consecutive cohort of EOS patients who underwent a serial 75% body weight traction-elongation-flexion Mehta cast protocol with waterproof cast padding. The addition of 3-point apical translation with stockinettes was utilized during casting. Bracing was initiated after correction <15° or 1 year of serial casting.

RESULTS: Seventeen patients at mean age 22 months, with pre-cast Cobb angle 52.4° (R: 35°-75°), underwent 10.6 months of casting with 5.7 casts. In-cast correction index was 66%, for post-cast Cobb angle 18.1°. At mean 5.1 years (R: 2.1–9.4 years), 14/17 (82%) successfully avoided surgical intervention, and 9/17 (53%) maintained correction <25°. Three of 17 (18%) ultimately required surgery with halo-gravity traction followed by magnetic growing rod therapy at 6.2 years post-casting; 2/3 had significant noncompliance with loss to follow up of ≥3 years prior to surgery. Three of 17 (18%) required a second round of casting; one underwent surgical conversion at 5.3 years, and two had curve control at 30° and 54° at 4.2- and 5.1-years post-casting, respectively. No major cast related complications, decubiti, or cast holidays were encountered. One patient incurred a superficial 2 cm cast saw burn during creation of an abdominal window, and one required early final cast removal due to parental perception of discomfort. Final in-cast correction ratio (p=0.006) and post-cast Cobb angle (p=0.003) were the only variables predictive of ultimate need for surgical conversion.

DISCUSSION AND CONCLUSION: Serial waterproof Mehta casting is safe and efficacious in EOS when compared to published literature of traditional Mehta casting. Of 17 patients with mean pre-cast Cobb 52.4°, 82% successfully avoided surgery and 53% maintained mild curves <25° magnitude at 5.1 years follow up. No major complications or skin decubiti occurred, and advantages include clearance for bathing and avoidance of need for cast holidays during treatment.