The "Evidence-Based" Care Guideline for Serial Casting of the Lower Extremity

The Occupational and Physical Therapy Departments of Cincinnati Children’s Hospital undertook to build a guideline for serial casting of the lower extremity, which was published in 2009. No such undertaking is easy, and I do applaud the effort to contribute to the knowledge base in clinical practice. However, great rigor is required to make such a contribution scientifically sound and safely applicable.

Should the reader encounter this document, having read this text, I expect that the numerous flaws will surface in the scope and currency of the literature review – with no mention of the known hazards of BTX-A use for EQD; the erroneous definitions of spasticity, tone, and hypertonus; the acceptance of manual stretching (unsupported by evidence) as a treatment strategy; the notion that Kay et al (2004) found that BTX-A improved muscle length and passive joint motion; the reliance upon “Local Consensus” as evidence; and the frequent use of my text of 1990 (19 years old at the time of publication) as a primary source of evidence – repeatedly referring to Cusick 1990 rather than to the studies I cited in that text. (For more than 2 decades, I have stood corrected on the notion that foot deformity can be induced by spasticity - as I had been led by 1990 to believe - and as the title of that book suggests. Cusick 2000, 2006, and 2010)

The authors of the guideline make no reference to the issue of postural control deficits as a focus of management, and recommend proceeding to “dynamic AFOs” (DAFOS) after casting without explaining the DAFO features or providing criteria for that apparently global decision.

I notice that Moseley (1997) is listed among the references supporting serial casting in the Cincinnati CH document that states that it pertains to children. The focus of Moseley’s article is on the adult with brain injury. The forced DF with midfoot smashing technique that is illustrated in Moseley’s article is a horror to behold. If the client presents with supination and EQD, I support molding the foot joints into pronation, but I do not support overstretching the TS tissues in a cast, as the likelihood of provoking painful spasm and skin breakdown is very high. I consider Moseley’s level of exposure to a casting method - without providing a sound education concerning foot joint alignment and protection, and addressing the injurious effects of soft tissue overstretch - to be irresponsible.

Verplancke et al (2005) – cited as evidence in favor of using BTX with casting for children - investigated the contribution of BTX to preventative casting for 28 adult clients with acute, severe brain injury, and determined that casting without the BTX was sufficient, and that the addition of BTX warrants further investigation.

Suffice to say that my inquiries into the evidence supporting serial casting and manual stretching, and my understanding of the biomechanics of cast and AFO design, the kinesiology of weight line training for contracture reduction, and interest in the new developments in physiology of tension reduction for contracture reduction - have surpassed those of the authors of the document from Cincinnati Children's Hospital. After 13 additional years of study (since 1990), I am less inclined to apply stretch past R1 end range to the TS muscle and soft tissues, and urge the reader to follow suit. And the prescription of an AFO without customizing design features to address critical, individual biomechanical and somatosensory requirements betrays a significant deficit in understanding.
References


Cusick B. 2010. Serial Casting and Other Equinus Deformity Management Strategies for Children and Adults with CNS Dysfunction. Telluride CO: Progressive GaitWays, LLC.


