Comparing Constraint-Induced Movement Therapy to Conservative Treatment for Obstetrical Brachial Plexus Injury

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### Introduction

- **Constraint-Induced Movement Therapy (CIMT):** constrain non-involved extremity and have intensive task oriented training of the involved extremity
  - There must be muscle function in the involved extremity in order for CIMT to create functional gains
  - Amount of time limb is constrained is reduced compared to adult CIMT in order to prevent frustration
  - There has not been a set amount of time to incorporate CIMT into a child’s typical day
  - There is not a specific mechanism defined to constrain the uninvolved extremity

- **Conservative Treatment:** consists of joint protection and positioning, sensory stimulation, ROM, stretching, and strengthening
  - ROM is imperative due to the need to prevent contractures and allow the child to become aware of the extremity
  - Strengthening should consist of functional play activities

### Background

- Obstetric Brachial Plexus Injury (OBPI) is caused from injury during delivery resulting in partial or complete paralysis of the involved upper extremity
  - Risk factors for OBPI include: increased birth weight, prolonged labor, perinatal asphyxia, shoulder dystocia, breech delivery, and forceps delivery
  - Most common involvement is C5-C6 (Erb’s palsy)
  - Typical presentation for Erb’s palsy: shoulder extended, internally rotated, and adducted; elbow extended; forearm pronated (known as loose Waiter’s tip posture because wrist not involved)

### Clinical Relevance

- CIMT encourages the use of the involved extremity
  - Improves use-dependent plasticity of central nervous system
  - Allows the child to overcome developmental disregard of the involved extremity
  - Allows for peripheral nerve reconstruction
  - Incorporates use of repetition
  - CIMT is not indicated for all children with OBPI due to increased irritability levels
  - Improve performance in ADLs
  - Improve function of involved upper extremity
  - Too much time with the extremity constrained reduces compliance

### Evidence

- Has been demonstrated that CIMT improves the use of the involved extremity
  - CIMT shown to improve the quality of movement
  - CIMT shown to increase a child’s willingness to use the involved extremity
  - Parent reports positive gains in child’s ability to perform bimanual activities (combing hair, eating, etc.)
  - Early treatment is necessary to maximize improvement
  - Additional studies need to be completed to validate the benefits of CIMT
  - Studies need to determine method of constraint and amount of time for CIMT in order to optimize compliance

### References