Title: Impact of selective percutaneous myofascial lengthening on quality of life
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Background and Objectives:
Children with cerebral palsy (CP) may have impaired independence, intelligence and mobility. Despite no cure, interventions exist like physical therapy, botulinum toxin injections and selective percutaneous myofascial lengthening (SPML). This minimally invasive surgery decreases muscle tightness and spasticity from contractures in the hips, knees and ankles. Our objective was to determine how SPML affects these children physically and emotionally by comparing Cerebral Palsy Quality of Life (CPQOL) questionnaires before and one year after surgery. We hypothesized that SPML would improve domains related to function and physical health.

Study Design:
Interventional prospective cohort study

Study Participants & Setting:
Children ages 4-18 with muscle spasticity and/or contracture who received SPML at least a year prior to follow-up in a university hospital setting. Exclusion criteria included no SPML despite completion of the preoperative questionnaire, concurrent/additional procedures before follow-up, or deceased at follow-up.

Materials/Methods:
The Cerebral Palsy Quality of Life (CPQOL) questionnaire has child and teen versions and asks questions about emotional, physical and social aspects of living with CP. Primary caregivers completed questionnaires before surgery and were contacted a year later. Patient charts were retrospectively reviewed for demographic and preoperative measurements such as ability on the Functional Mobility Scale (FMS). Primary outcomes were CPQOL scores. FMS and the answer to “Are you glad in general your child received this procedure?” were also obtained at follow-up. Paired t-tests compared preoperative and follow-up measures.

Results:
Of the 94 patients who completed preoperative questionnaires, 60 met inclusion and exclusion criteria. Of those eligible, 40 provided updated FMS and answers to the satisfaction question, and 28 completed follow-up questionnaires (25-child, 3-teen). Data from the child group were analyzed (mean age 7.3y [SD=2.5]; 14 males, 11 females). Average follow-up period was 14.8 months (SD=1.8), and patients received SPML operations at an average of five locations (SD=2.5).

Three domains were statistically significant by paired t-test (alpha=0.05): “Emotional wellbeing and self-esteem,” “Feelings about functioning” and “Participation and physical health” with p-values of 0.028, 0.023 and 0.013, respectively. Domains for “Social wellbeing and acceptance,” “Access to services,” “Pain and impact of disability” and “Family health” failed to be significant. All caregivers who were reached reported they were glad their child had SPML, citing reasons like “no more Botox,” “no more falls” and “helps with physical therapy.” FMS scores did not change significantly.

Conclusions/Significance:
Preliminary results show that SPML significantly improves emotional wellbeing and self-esteem, feelings about functioning, and participation and physical health in children ages 4-12 with muscle spasticity and/or contracture. Further study with larger samples and longer follow-up is necessary to confirm these effects.