INTRODUCTION

Cerebral Palsy is a disorder of movement and posture that results from a non-progressive lesion or injury of the immature brain\(^1\). It is often classified by the extremities affected; diplegia refers to those with both legs affected. Abnormal movement in both legs leads to gait abnormality in these patients. Commonly, ambulatory children with cerebral palsy undergo soft tissue release such as hamstring lengthening for the treatment of gait abnormality. A retrospective review of this multilevel procedure by Adolfsen et al showed a decrease in popliteal angle, increase in ankle dorsiflexion, and increase in stride length and cadence suggesting both kinematic and kinetic benefits.\(^2\)

It’s clear that hamstring lengthening improves gait mechanics and makes walking more efficient, but does it actually improve function?

Purpose: The purpose of the present study is to assess the gross mobility functional effects of hamstring lengthening procedures in ambulatory children with cerebral palsy.

Clinical Question: After undergoing hamstring lengthening do functional measures including Gross Motor Functional Classification Score\(^4\) (GMFCS) and Gross Motor Function Measure\(^5\) (GMFM) significantly change in ambulatory children with cerebral palsy?

Hypotheses: GMFCS D and E data will improve after undergoing hamstring lengthening procedure; GMFCS level will remain unchanged.

RESULTS

A total of 149 subjects were included in the analysis. Demographic information was obtained and there were no significant differences based on age, gender, weight, height, and time to post operative gait analysis. The descriptive statistics can be found above in Table 1.

When divided by GMFCS level, the majority of the subjects were GMFCS level 3 (n=75). Two subjects moved from GMFCS level 1 to level 2 after their operation. Otherwise, GMFCS levels remained unchanged after the operative intervention (Figure 1).

All subjects were assessed in the GMFM-D assessing standing function as well as GMFM-E that assess walking, running, and jumping. In all subjects were assessed barefoot (Bare) and while wearing their usual orthoses (Mod). This is represented in Table 2 and graphically in Figure 2.

Comparison of Gross Motor Function Pre- and Post-Op

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CONCLUSION

Hamstring lengthening procedures significantly improves gross mobility, functional ambulation, and oxygen requirements for ambulation in patients with cerebral palsy, spastic diplegia who ambulate with an assistive device (GMFCS level 3).

REFERENCES