Gait correction surgery in children with Hereditary Spastic Paraparesis (HSP)

Introduction
Children with Hereditary Spastic Paraparesis (HSP) present with a similar range of gait disorders and clinical phenotypes to children with Cerebral Palsy (CP)\(^2,3\). However, there is more uncertainty about the natural history of gait and function in HSP which translates to uncertainty about appropriate management, especially invasive surgical procedures. We report the gait and function of ten children with HSP, who had gait corrective surgery, with short and medium term follow-up based on Instrumented Gait Analysis (IGA).

At T1, mean (SD) age was 10 years 6 months (2 years 7 months). Children were functioning at GMFCS levels I–III (Table 1). 7/10 children showed a clinically significant improvement in GPS (Figure 1) at T2 and/or T3 in comparison to baseline, based on a minimal clinically important difference (MCID) of 1.6°. Figure 2 shows the change in gait parameters (gait variable scores) at each joint over time. Encouragingly, only 1/10 children showed a deterioration in GPS in excess of the MCID.

Results
7/10 children showed a clinically significant improvement in GPS (Figure 1) at T2 and/or T3 in comparison to baseline, based on a minimal clinically important difference (MCID) of 1.6°. Figure 2 shows the change in gait parameters (gait variable scores) at each joint over time. Encouragingly, only 1/10 children showed a deterioration in GPS in excess of the MCID. For the majority of this cohort, gait was maintained or improved following surgery and standard rehabilitation. However, some children presented with milder gait impairments showed less evidence of change. It would seem appropriate therefore to refer such patients for IGA and consider targeted surgical intervention followed by intensive rehabilitation using protocols based on the management of children with CP\(^2,3\).

Conclusion
For the majority of this cohort, gait was maintained or improved following surgery and standard rehabilitation. Individually, some children with patterns such as crouch gait showed very significant improvements in gait and function which were maintained at T3. Others with milder gait impairments showed less evidence of change. It would seem appropriate therefore to refer such patients for IGA and consider targeted surgical intervention followed by intensive rehabilitation using protocols based on the management of children with CP\(^2,3\).

References