**Changes of gait parameters in Parkinson disease (PD) patients who underwent Deep Brain Stimulation (DBS) Surgery: A prospective one year study**

V. Karthikeayan, J. Somerset, B. Hammersley, A. Macerollo, M. Bonello (The Walton Centre, NHS foundation trust)

Objective: To measure the pre and post-operative gait parameters of patients who underwent DBS surgery using wearable sensor technology (Quantified Time up and Go(QTUG)).

Background: DBS provides efficient treatment for the alleviation of motor signs in patients with PD although it is less successful in improving gait and imbalance. Three patients whose gait parameters, fall risk and underlying frailty were improved using DBS and immediate feedback through the QTUG device have been presented previously (1). We have extended our study to measure the natural impact of DBS on the gait parameters of 8 PD patients after standard DBS calibration.

Methods: 8 patients who underwent DBS over the last year were enrolled. We measured the stride length, stride velocity, cadence, TUG time and variability scores (overall, stride velocity, stride length, swing time, stride time, stance time and step time) pre-DBS and 6 months post DBS both in motor ‘ON’ and motor ‘OFF’ state. An average of 3 readings was used in both states. Wilcoxon-signed rank test was employed to determine the statistical significance of the outcomes.

Results: The gait parameters that showed statistically significant improvement at 6 months post DBS follow up are demonstrated in

Table 1. None of the parameters showed significant deterioration, however, ‘OFF’ time swing time variability and ‘ON’ time stride length variability showed a trend towards worsening at 6 months.

Conclusions: Conclusions: DBS resulted in improvement of gait parameters of PD patients at 6 months as measured by the QTUG device. A larger cohort is needed to answer if this trend can be sustained and if there are any relationships between gait parameters and non-motor impairment following DBS.

References: (1) Somerset J, Hammersley B, Bonello M. Can the Quantified Timed Up and Go (QTUG) device support decision making for patients undergoing Deep Brain Stimulation?: 1091. Movement Disorders. 2019 Oct;34.