Utilization of a Visualization Software Tool for Deep Brain Stimulation Programming in a Subset of Subjects with Parkinson's Disease Who Participated in the INTREPID Randomized Clinical Trial

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Disclosures

- Michele Tagliati has a consulting agreement with Boston Scientific.

- Rajesh Pahwa and Cathrin Buetefisch are study investigators in Boston Scientific sponsored INTREPID study.

- Holly Kaufman, Roshini Jain and Lilly Chen are salaried employees of Boston Scientific.
Optimization of Deep Brain Stimulation programming involves an
• Ongoing
• Lengthy and sometimes inefficient
• Trial-and-error process of various stimulation parameters

The use of a new visualization tool that can illustrate the location of the DBS lead in the patient’s own-segmented anatomy may help to improve the efficiency of achieving programming optimization and outcomes specific to the individual patient (Pavese et al., 2019).

Here, we present the experience of our use of the visualization tool in two subjects, participating in the INTREPID Randomized Controlled Trial
Methods

- All INTREPID subjects upon completion of the 12-week blinded period are in the open-label phase and followed up to 5 years post-randomization.
- Subjects are being assessed and/or programmed as needed using a new visualization tool.

GUIDE XT (Boston Scientific) is a visualization tool that may help improve the efficiency of achieving programming optimization and outcomes specific to the individual patient.

- Utilizes each subject’s pre-op MRI and post-op CT to create patient specific anatomy:
  - Visualization based-programming
  - DBS lead relative to anatomical targets
Results: Case Subject 1

Case Subject 1

- Female
- Age: 59 years
- Duration of Disease: 19 years
- Received Vercise Implant on April 14, 2015
- Screening UPDRS III scores (meds off): 53

Subject received programming settings based on GUIDE XT recommendations and returned for follow up 11 days after with same settings.
Results: Case Subject 1

- Stimulation parameters and Volume of tissue activated (VTA) modified based on visualization of lead

- A clinical significant improvement in UPDRS III scores (meds off) [38 -> 32] was reported with the use of recommend settings
Results: Case Subject 2

Case Subject 2
- Female
- Age: 57 years
- Duration of Disease: 17 years
- Received Vercise Implant on July 24, 2017
- Screening UPDRS III scores (meds off): 30

Subject received programming settings based on GUIDE XT recommendations and returned for follow up 182 days after with same settings
Results: Case Subject 2

- Stimulation parameters and Volume of tissue activated (VTA) modified based on visualization of lead

- A clinical significant improvement in UPDRS III scores (meds off) [26 -> 18] was reported with the use of recommend settings
Discussion

• In this case series of two subjects (with over two years of stimulation as part of the INTREPID Study), the new visualization tool recommended stimulation parameters that led to clinically significant motor improvement (as assessed by UPDRS III scores in the *meds off* condition)

• Use of a visualization tool to help guide DBS programming, may offer an opportunity to enhance the overall experience of DBS, thereby potentially contribute to achieving highly effective and desired clinical outcomes.
Summary Points

• Preliminary analysis of two subjects who utilized the visualization tool to further optimize their settings (in long term follow up) suggested a further improvement in motor function with the use of new settings.

• The new visualization tool can provide useful information to achieve a clinical improvement comparable to that obtained with the standard trial and error approach.

• Visualization based programming may provide shorter and more efficient programming sessions while maintaining or improving outcomes.