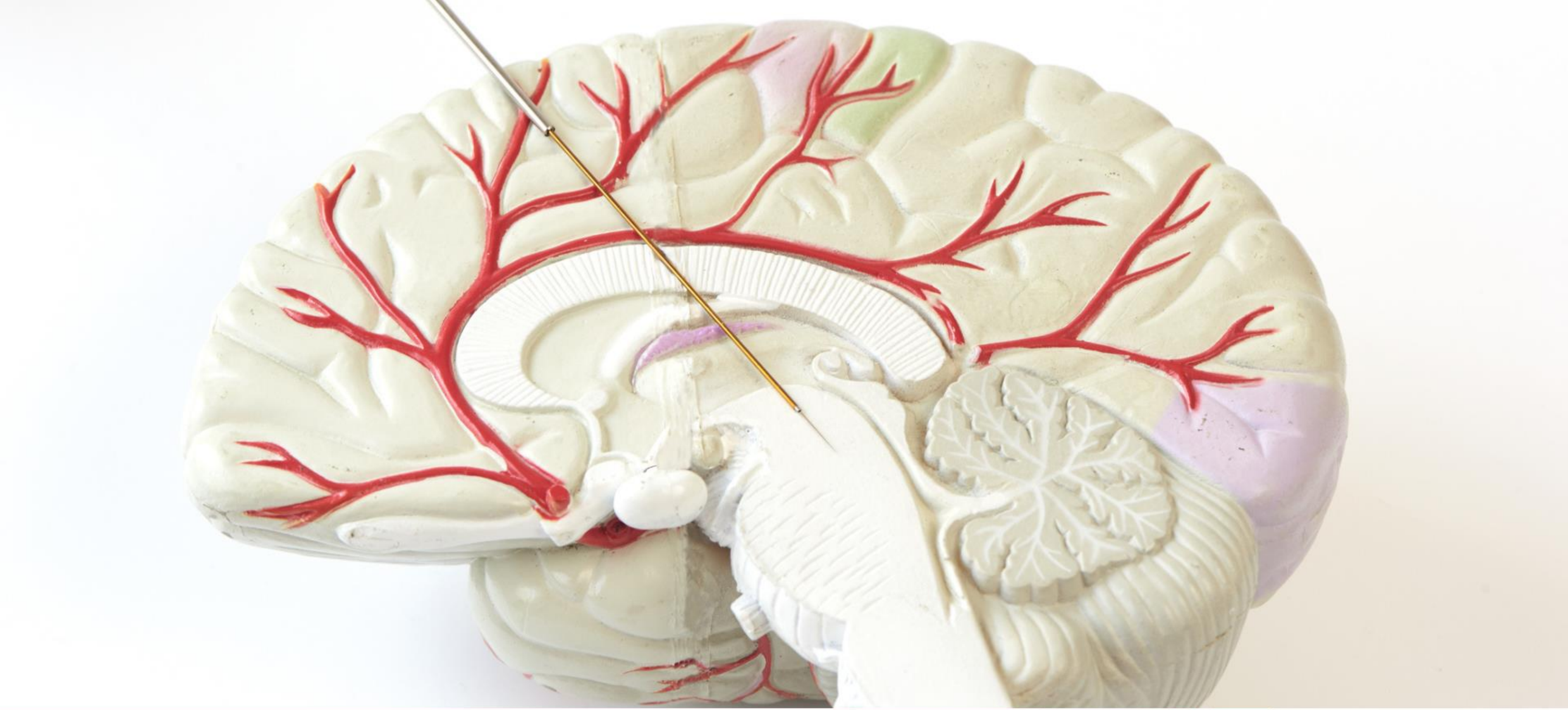

5th Neuromodulation School for Movement Disorders

New York, New York, USA | August 13-14, 2026

International Parkinson and
Movement Disorder Society
Pan American Section

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DBS CASE PRESENTATION

Harini Sarva MD

Initial Presentation

- CC: R hand tremor x 2 years

- HPI:
  - A now 60 y/o M presented approximately 5 years ago after being diagnosed with Parkinson's disease at the age of 53.
  - Initial symptom: "twitching of my R hand"—intermittent and occurring with stress → involves more of my R hand
  - Dexterity issues with handwriting, shaving, cooking
  - No gait or balance issues
  - No significant functional disability
  - No mood or memory symptoms
  - Nocturia interferes with sleep

PAST HISTORY

- PMH: HTN
- PSH: none
- Medications: HCTZ, Telmisartan
- Social history: unremarkable
- FH: none
- ROS: + tremor; nocturia; sleep disturbance

Initial Exam

- **Alert and oriented x 3. Normal registration, attention, fund of knowledge, naming, repetition, comprehension and recall. No apraxia**
  PERRLA, EOMI, OKN's present in all directions, VFF, face flat L NLF , normal facial sensation, Reduced L shoulder shrug, tongue/palate midline
  Motor: normal bulk and strength.
  Sensory: normal light touch, pinprick, vibration, temperature and joint position
  Cerebellar: Accurate FTN b/l
  Reflexes: 2+ b/l triceps, 1+ b/l biceps, 1+ brachioradialis and 2+ patellar, 0 b/l ankle jerks; downgoing plantars.
- **Gait: Slight drag to R leg but no freezing and turns were stable**

Initial movement exam

- Moderate R arm resting tremor
- Moderate R arm bradykinesia and rigidity
- Walks slowly but without significant difficulty
- L sided signs were mild

Some Questions to Consider

- How would you describe his phenotype?
- How would you manage his symptoms?
- What are your thoughts about his potential DBS candidacy?

Disease Course

- Over the next year noted more bothersome tremor and stiffness despite his active exercise regimen—carb/levo was started
- Mood was beginning to become dysphoric but remained mild
- The first year of carb/levo –taking only 200mg with good benefit
- Then in year 2 of treatment—noted mild “fidgetiness” and truncal dyskinesia

- Now he is 5 years into the disease with levodopa response but developing dyskinesia that are NOT bothersome at low doses of C/L:

- Would you refer for surgery now?
  - Why or why not?

- What would you treat with at this time?

- How would you broach the subject of surgical interventions: DBS vs HIFU?

Patient's Story Continued

- His levodopa is now lasting 2-2.5 hours when he takes it regularly TID
- He is also developing noticeable R foot turning in while walking but unsure relation to medication timing
  - Does not affect gait too much
- C/L increased to 1.5-1.5-1 as dyskinesia are not bothersome and patient is very active
  - Patient thinking about advanced therapies
- Entacapone and amantadine were added→ still with motor fluctuations and dyskinesia but patient not functionally impaired despite 4 hours of off time

- Eventually patient switched to new extended-release carb/levo with less off time and peak dose dyskinesia

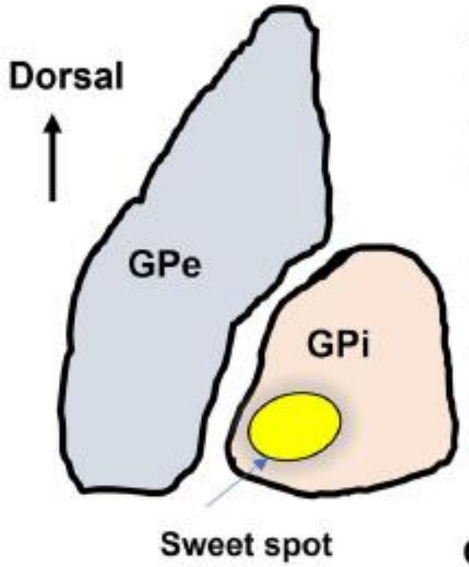
- Nearly 6 years after initial presentation with me and 8 years into his disease he remains very active, has severe dyskinesia on high doses of ER C/L and has NO cognitive complaints but notes some constipation and sialorrhea

- He now is more interested in his advanced options

- What would be the best option for him and why:
  - –Subcutaneous apomorphine
  - –Subcutaneous foscarbidopa/foslevodopa
  - –HIFU
  - –DBS

- If DBS, which target and why?

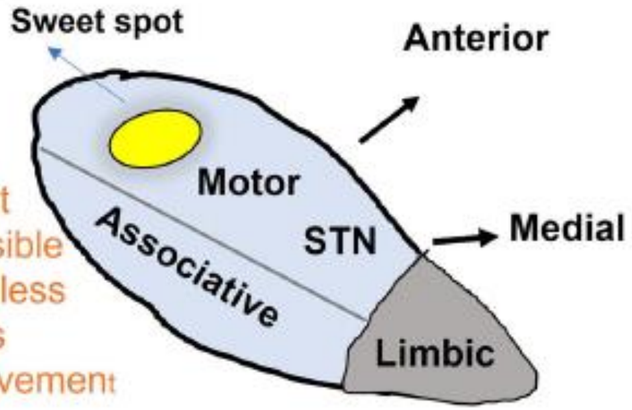
Target selection



STN dorsolateral sweet spot

- Bradykinesia less
- Rigidity better
- Tremor reduced

- Gait freezing improvement
- Medication reduction possible
- Impulse control disorders less
- Autonomic symptoms less
- Sleep, pain, fatigue improvement



GPi posteroventral sweet spot

- Bradykinesia less
- Rigidity better
- Tremor reduced

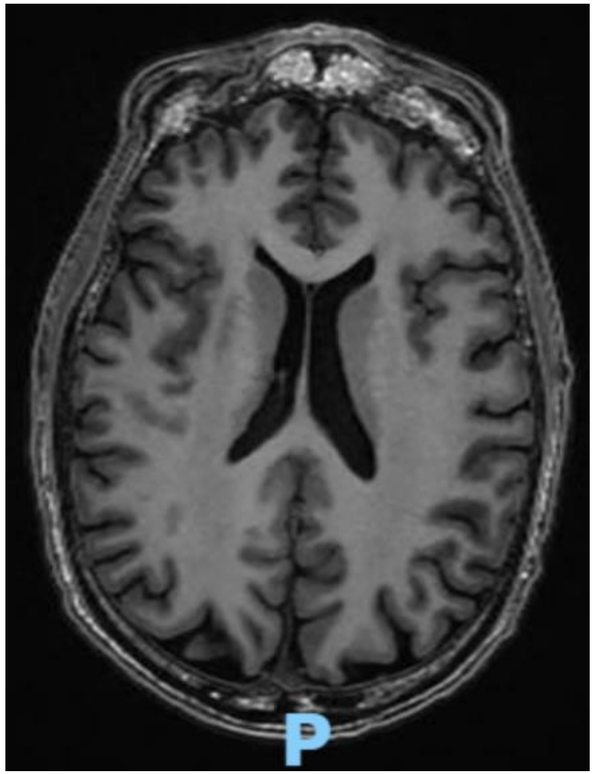
- Dyskinesia reduction (direct control)
- Cognition decline likely less
- Mood/behavior impairment likely less
- Balance decline likely less

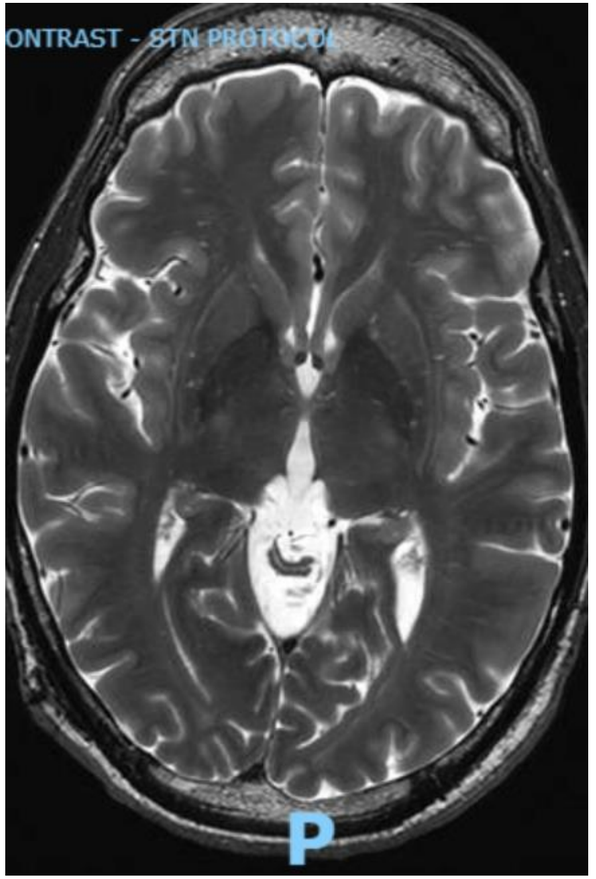
Wagle Shukla NPJ 2025

- Patient finally decided to meet with our Neurosurgeon and proceed with DBS evaluation

- Neurocog testing:
  - No subjective cognitive complaints
  - No difficulties with ADLs or IADLs
  - No subjective psychiatric symptoms including depression/anxiety, SI
  - No significant substance use
  - Scored high on the DRS2
  - Strong attention and executive functioning
  - Working memory—high average to very high
  - Complex attention—very high
  - Ability to learn and retain new material—Variable
  - Visuospatial functioning affected by his tremor
  - Language: very high scores in semantic fluency but confrontational naming had deficits

PREOPERATIVE IMAGING

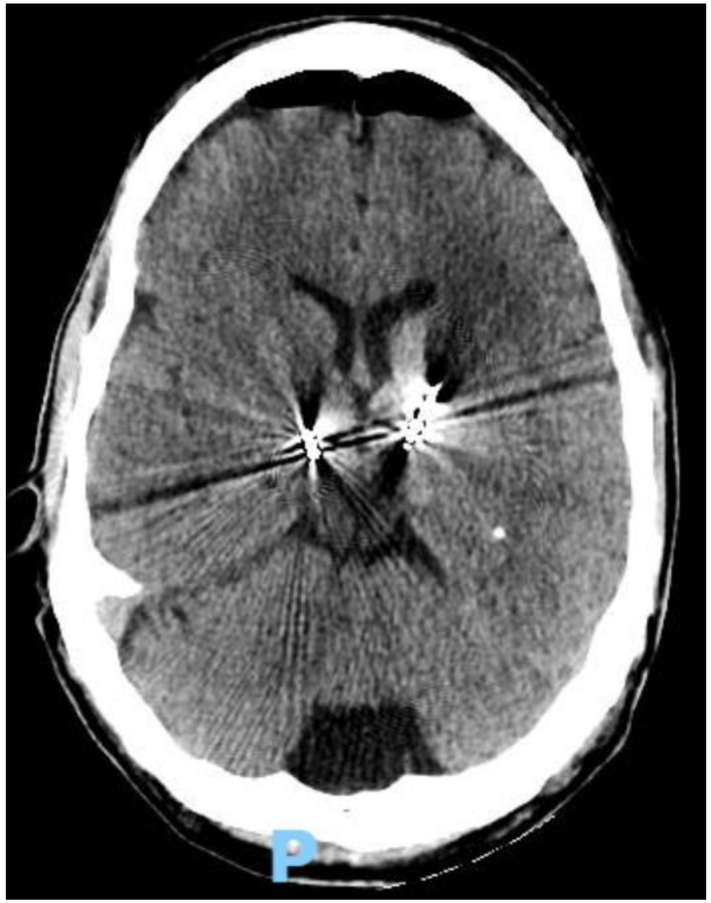




- Any concerns on cognitive testing or preoperative imaging to suggest not moving forward?

- Has your decision about the target changed?

Patient underwent STN DBS placement. Postoperative imaging:

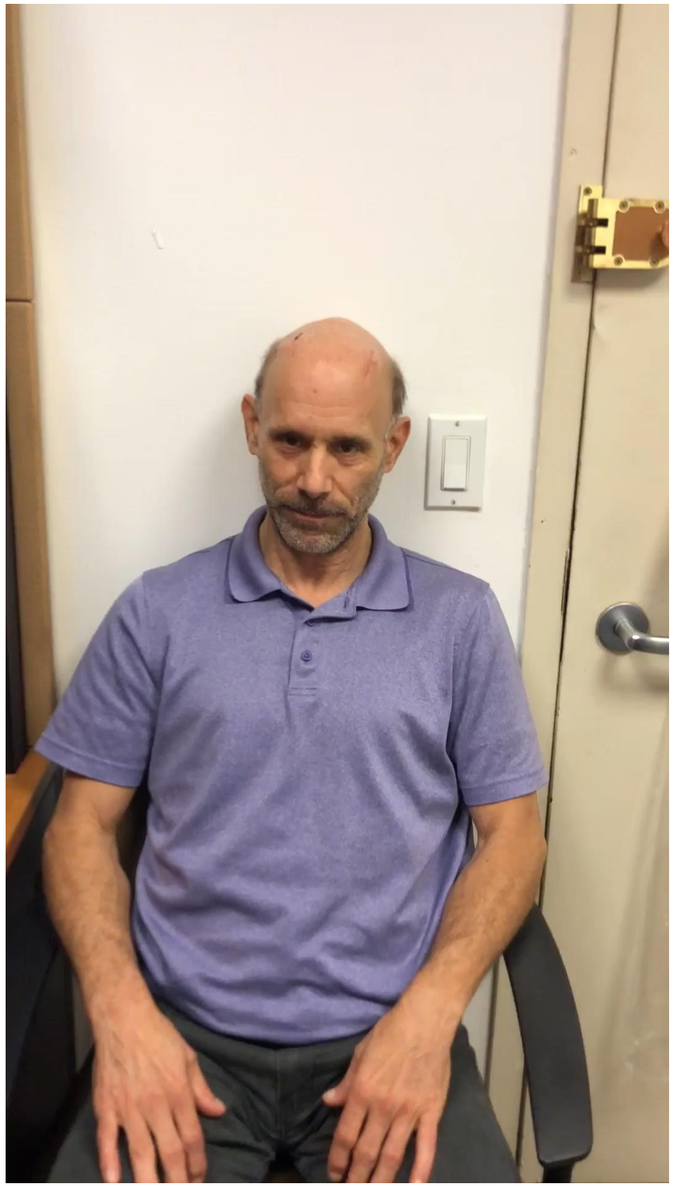


Initial Settings after IPG placement:
L STN: C+2-/1.0mA/ 60us/165 Hz

R STN: C+9-/0.5mA/60/165 Hz

Low settings due to dyskinesia noted at initial programming

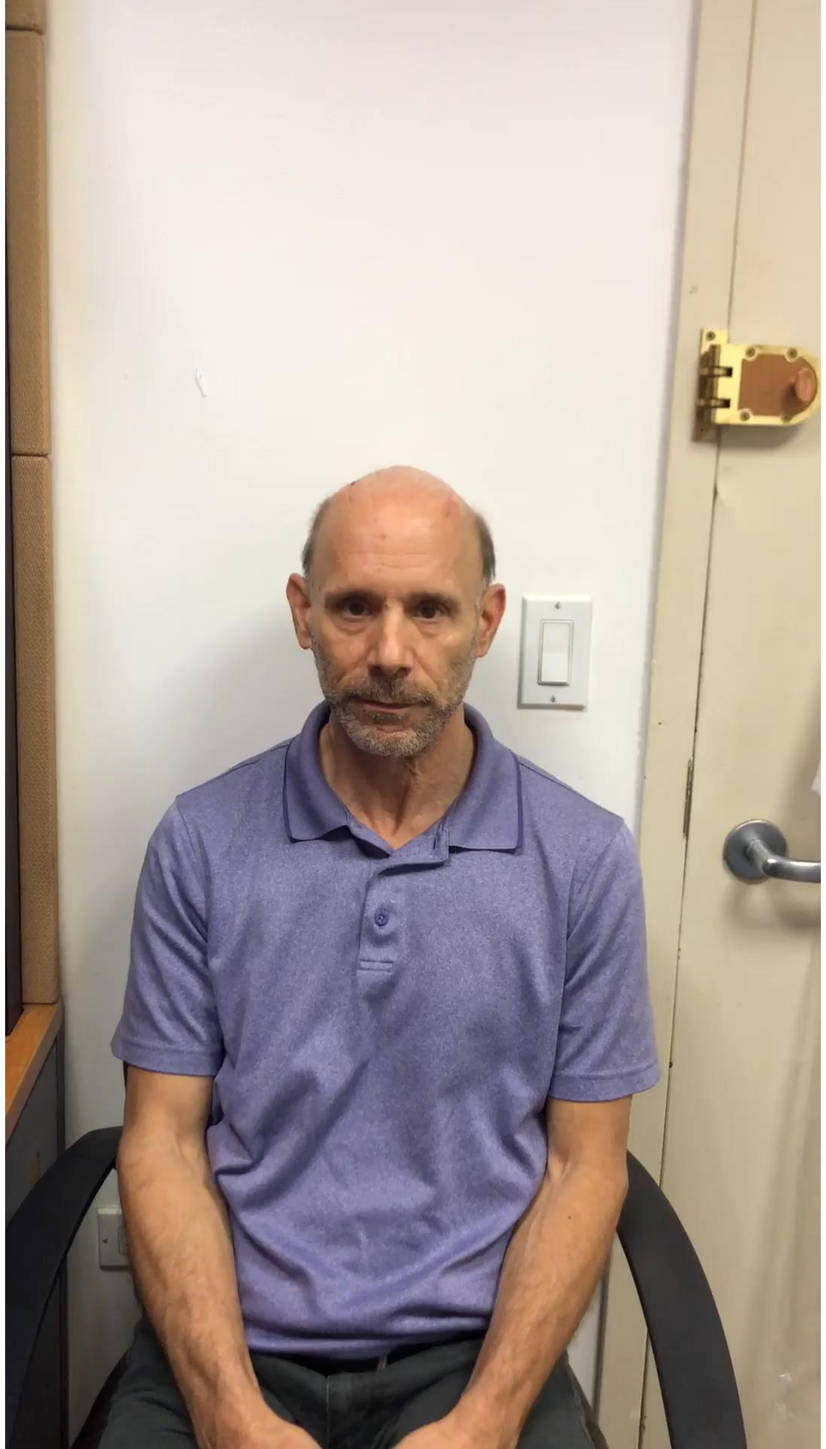
OFF Stimulation Video (original DBS settings)



ON Stimulation Video after DBS adjustments:

L STN: C+1-/1.5 Ma, 60 us/ 165 HZ

R STN: C+9-/0.7 mA/60us/165 Hz



Follow Up

- Patient very sensitive to stimulation
- Dyskinesia worsened but tremor had better control
- Lowered settings slowly as well as excess carb/levo
- Dyskinesia improved; tremor intermittently present