



Advanced Therapies for Parkinson Disease



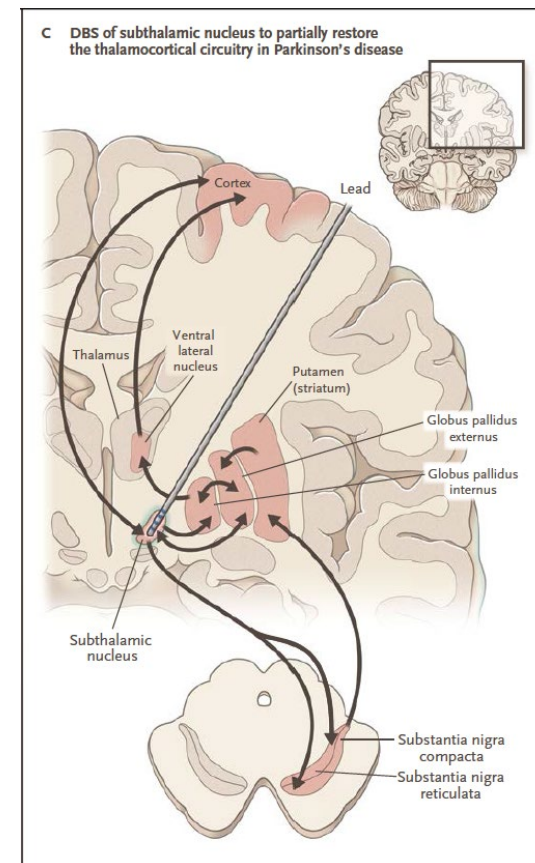
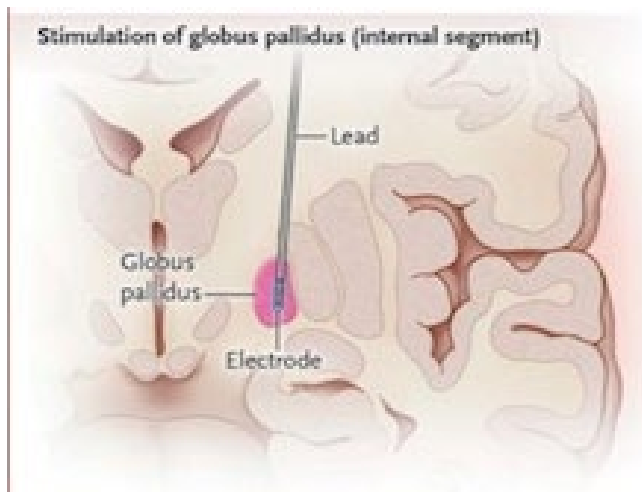
The NEW ENGLAND JOURNAL of MEDICINE

Deep-Brain Stimulation — Entering the Era of Human Neural-Network Modulation

Michael S. Okun, M.D.

Different Targets:

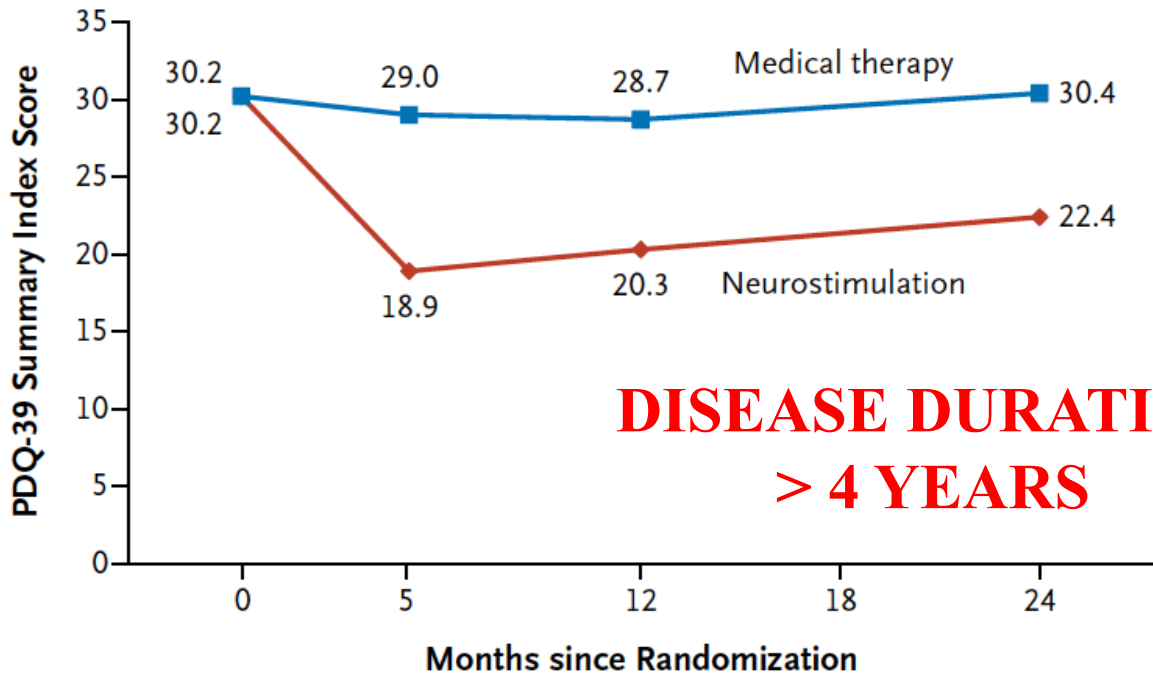
- STN (Parkinson)
- **GPI (Dystonia – Parkinson)**
- **Vim (Tremor)**



ORIGINAL ARTICLE

Neurostimulation for Parkinson's Disease with Early Motor Complications

A



**DISEASE DURATION
> 4 YEARS**

Dr. Schuepbach, Mr. Rau, and Dr. Knudsen and Dr. Agid, Ms. Schade-Brittinger, and Dr. Deuschl contributed equally to this article.

N Engl J Med 2013;368:610-22.

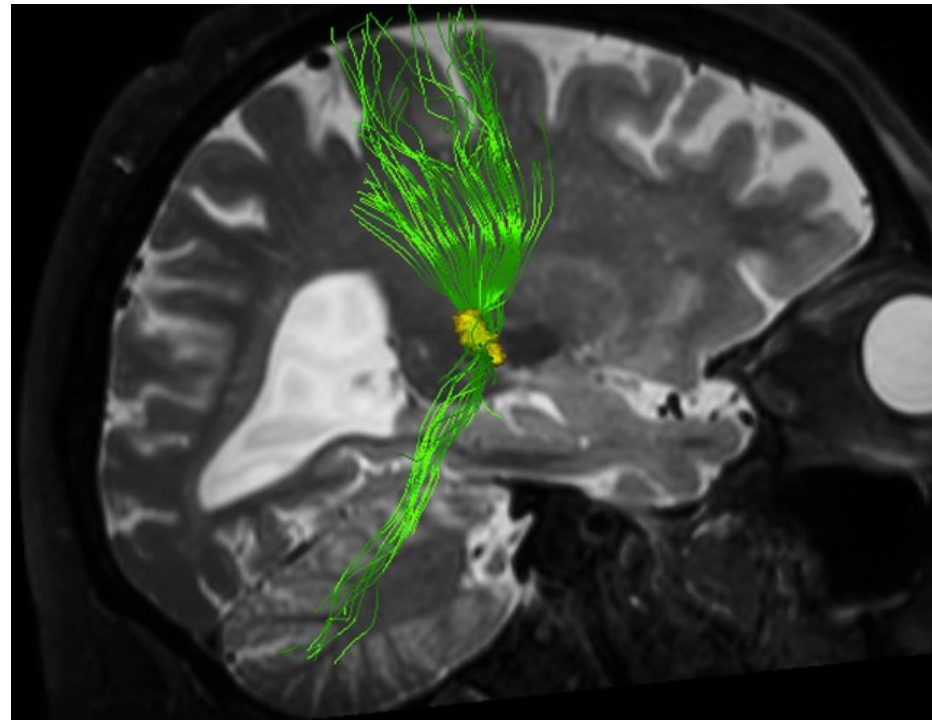
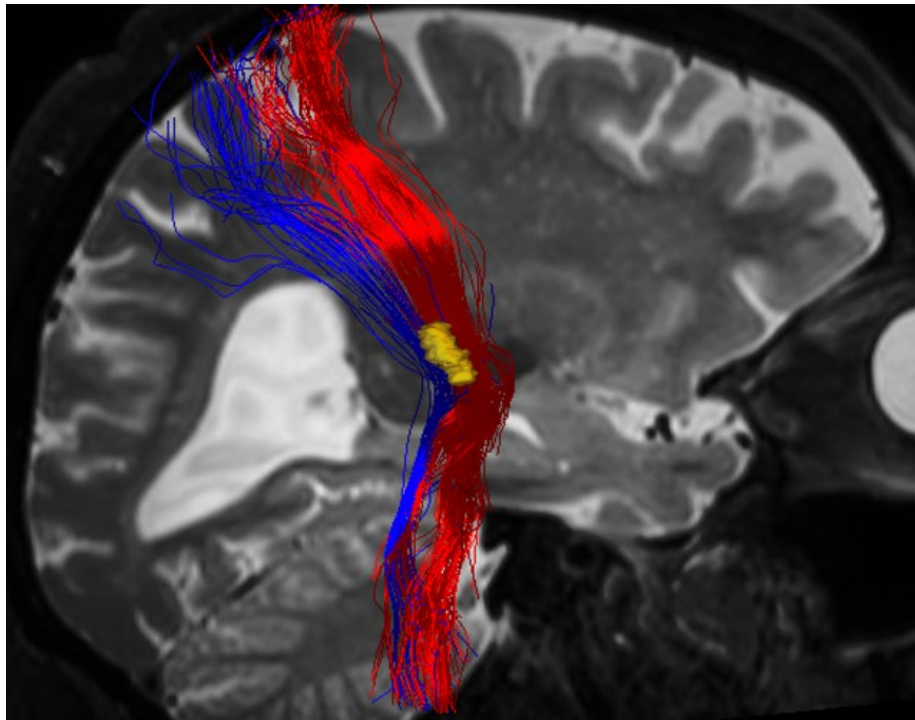
Surgical Targeting: The Stereotactic Approach



Intraoperative Lead Confirmation



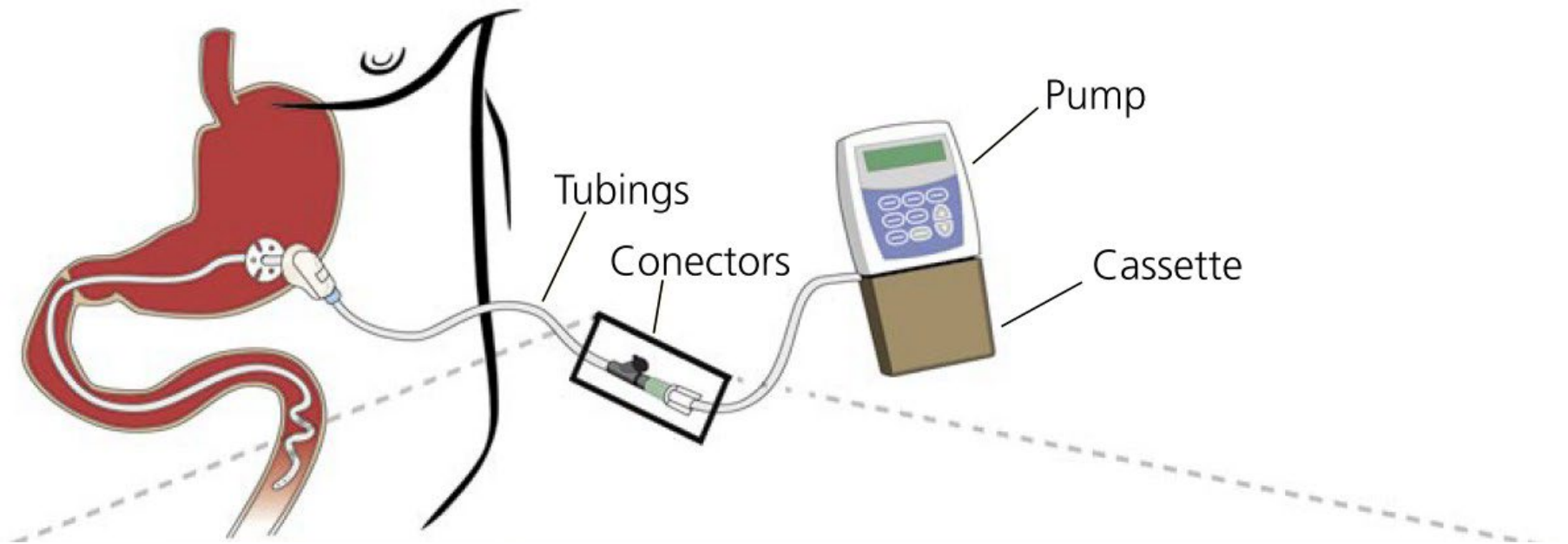
Strategies to improve the surgical accuracy



MR-guided Focused Ultrasound Ablation



Enteral Gel Infusion of Carbidopa/Levodopa



Subcutaneous Infusions

