

Long-Term Quality of Life after Subthalamic Deep Brain Stimulation for Parkinson's Disease: experience from a single center.

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BACKGROUND

Deep brain stimulation of the subthalamic nucleus (STN-DBS) is considered the mainstay therapy for complex-stage Parkinson's disease (PD), especially to control motor symptoms and motor fluctuations and allows a reduction in oral dopaminergic therapy.

OBJECTIVE

We present a long follow up over a period of more than 10 years in a cohort of patients who underwent bilateral STN-DBS surgery.

METHODS

We selected PD patients who underwent bilateral STN-DBS surgery at Parkinson Unit of AOUC Careggi in Florence from 1997 to 2024 and followed on a year-basis.



For each patient we collected medical history and clinical assessment:

- Patients were evaluated before surgery (**baseline**) and at post-operative annual follow-up, in **MED-OFF state** (after a 12-hour washout of the oral therapy) and in **MED-ON state** (after 1 hour the assumption); for **post-operative** the evaluations in MED-OFF and MED-ON states were assessed while holding cerebral stimulation active (**STIM-ON**).
- Each assessment included: Unified Parkinson's Disease Rating Scale (**UPDRS**), Hoehn&Yahr (**H&Y**) scale, Schwabb&England (**S&E**) scale, levodopa (LD) and levodopa equivalent daily dose (**LEDD**).

RESULTS

125 patients underwent bilateral STN-DBS surgery (M:F=74:51)



96 patients (M:F=60:36), of which all annual assessments were complete, were considered eligible for the study: mean age at DBS surgery was 60.74 (±6.97) and mean duration of disease was 12.94 (±5.02)



patients were divided into three groups according to the follow-up length.

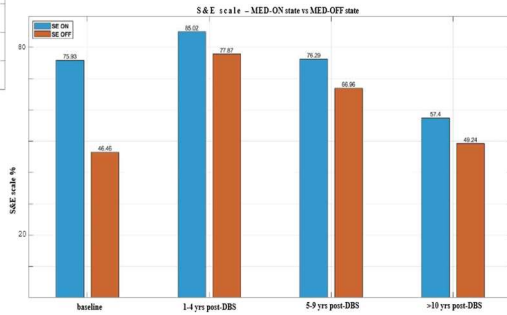
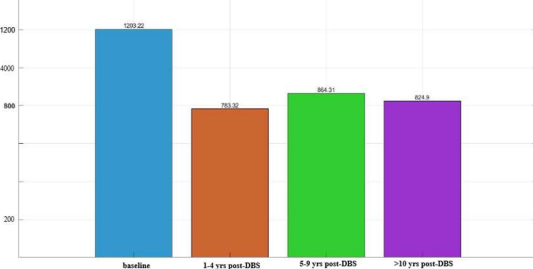
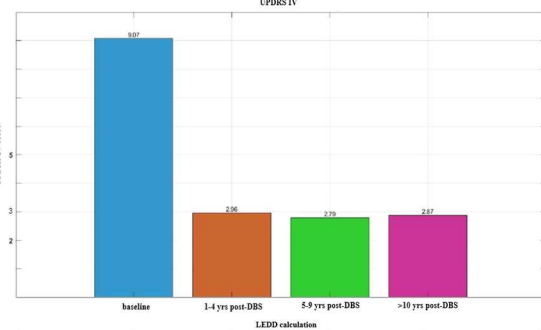
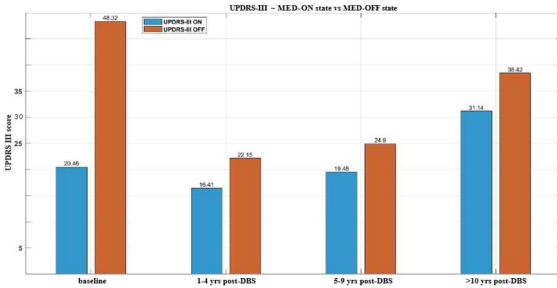
- group A (1-4 years) with 96 patients (100%)
- group B (5-9 years) with 77 patients (80.2% of group A)
- group C (more than 10 years) with 40 patients (41.7% of group A)

GROUP C DEMOGRAPHICS

patients (n)	40
gender (M:F)	23:17
mean age at DBS surgery (yrs)	57.93 (±6.52)
mean duration of disease (yrs)	12.51 (±5.29)

EVALUATIONS IN GROUP C PATIENTS

item	baseline	follow-up 10+ years	p-value
UPDRS III OFF mean (SD)	48.32 (±20.09)	38.42 (±13.53)	>0,017
UPDRS III ON mean (SD)	20.46 (±14.24)	31.15 (±12.84)	<0,017
UPDRS IV mean (SD)	9.07 (±3.58)	2.87 (±2.38)	<0,017
LEDD mean (SD)	1203.22 (±458.16)	824.90 (±367.33)	<0,017
LD mean (SD)	855.04 (±719.38)	531.13 (±367.04)	<0,017
H&Y OFF mean (SD)	3.39 (±0.87)	3.70 (±0.89)	>0,017
H&Y ON mean (SD)	2.40 (±0.82)	3.42 (±0.96)	<0,017
S&E OFF mean (SD)	46.46 (±21.25)	49.24 (±17.90)	>0,017
S&E ON mean (SD)	75.93 (±18.59)	57.40 (±20.37)	<0,017



DISCUSSION

After STN-DBS patients show a significant improvement documented by UPDRS III score, which lasts even in very long follow-up. Moreover, this therapy allows a reduction in the total amount of oral therapy and improves patient's quality of life by reducing motor fluctuations and dyskinesias as demonstrate by UPDRS IV scale.

CONCLUSIONS

There are few data in the literature regarding a long-term follow-up of patients treated with DBS. Our cohort study confirms the advantage of STN-DBS therapy for the treatment of complex phase of PD even in the long term in motor performance and quality of life. The increasingly detailed characterization, from a clinical and genetic point of view, of the patients undergoing the treatment will allow us to identify the ideal patients to undergo these procedure.