

Supplementary data table S1: Summary of pre- and post-DBS changes

Supplementary data table S1: Summary of pre- and post-DBS changes	Pre-DBS	Latest post-DBS assessment (24-55 months)				
	Mean (SD)	Change				Responders*
		Min	Max	Mean (SD)	p-value	
YGTSS; n=5 (Total/100)	85.6 (13.8)	-34	-81	-57.8 (20.1)	0.003	100%
GTS-QOL; n=5 (/108)	60.4 (13.5)	-6	-64	-39.8(21.9)	0.015	100%
GTS-QOL VAS (/100)	37 (19.9)	5	70	39.6 (25.9)	0.027	
Y-BOCS; n=3 (/40)	19.7 (4.5)	-5	-20	-14.7 (8.4)	0.094	66.6%
BDI-II; n=3 (/63)	17.7 (7)	-11	20	-2 (19.2)	0.873	66.6%
BAI; n=3 (/63)	17.3 (18.3)	-11	20	-2.3 (19.5)	0.855	66,6%
Chronic medication#; n=5	4.2 (1.3)	0	-5	-2.2 (1.9)	0.063	N/A
*=%Percentage responders as per the predefined clinical thresholds; #=total number of chronic medication agents; N/A=not applicable						

Supplementary data table S2: List of medication for TS and co-morbid disorders at the time of DBS surgery and at last follow up. The total daily dose of each drug is entered in brackets.

Pt	Medication before DBS	Medication at latest follow-up post-DBS
1	Risperidone (3mg), Ziprasidone (80mg), Guanfacine, Lamotrigine (400mg), Fluoxetine (40mg)	None
2	Amisulpiride (100mg), Ziprasidone (80mg), Quetiapine (600mg), Clomipramine (50mg), Zopiclone	Amisulpiride (100mg), Trazodone (100mg), Orphenadrine (100mg), Escitalopram (20mg), Zopiclone
3	Aripiprazole (15mg), Tetrabenazine, Propranolol (80mg)	Aripiprazole (10mg)
4	Aripiprazole (10mg), Clonazepam, Escitalopram (20mg)	None
5	Risperidone (3mg), Quetiapine (300mg), Lorazepam (1mg), Fluoxetine (40mg)	Risperidone (1mg), Quetiapine (100mg), Lorazepam (1mg), Fluoxetine (20mg)

Supplementary date table S3: Stimulation parameters of patients

Pt	Initial stimulation parameters	Stimulation-related S/E encountered	Stimulation parameters at last follow up
1	Monopolar stimulation with deepest contact on both sides: bilateral 3.5V; 60us; 130Hz	None recorded	Dual monopolar stimulation with deepest two contacts: bilateral 3.9V; 110us; 130Hz
2	Monopolar stimulation with deepest contact on both sides: bilateral 3.5V; 60us; 130Hz	None recorded	Monopolar stimulation with deepest contact on both sides: bilateral 3.7V; 60us; 160Hz
3	Monopolar stimulation with deepest contact on both sides: bilateral 3.5V; 60us; 130Hz	Stimulation of the 3 rd deepest contact (2- and 10-) worsened tics and caused depressive mood	Dual monopolar stimulation with deepest two contacts: bilateral 4.0; 110us; 130Hz
4	Monopolar stimulation with deepest contact on both sides: bilateral 3.5V; 60us; 130Hz	Dual monopolar stimulation with middle two contacts (1-,2-,C+ and 8-,9-,C+) caused mania with suicidal ideation	Dual monopolar stimulation with deepest two contacts: left at 1.8V; 60us; 130Hz and right at 2.0V; 60us; 130Hz
5	Monopolar stimulation with second deepest contact on both sides: bilateral 3.0V; 60us; 130Hz	Akathisia with increased stimulation frequency above 140Hz	Dual monopolar stimulation with middle two contacts (1-,2-,C+ and 9-,10-,C+): bilateral 4.0; 90us; 130Hz

Pt = patient number; contact configuration ventral to dorsal left 0,1,2,3 and right 8,9,10,11; C = case S/E = side-effects; V = volt (constant voltage stimulation); us = pulse width in micro-seconds; Hz = Frequency in Hertz.

Supplementary date table S4: Summary of adverse events and outcomes

			Resolved
Device-related			
Removal of pulse stimulator or electrode	-		
Torsion of the extensions	-		
Other	Patient 5 (see note 1)		Yes
Surgery-related			
Infection	-		
Secondary sepsis	-		
Haemorrhage	-		
Skin lesions from accidental/self-induced injury	-		
Stimulation-related			
Bradykinesia	-		
Dyskinesia	-		
Dystonia	-		
Tic exacerbation	Patient 3 (see note 2)		Yes*
Gait disorder	-		
Dysarthria	-		
Depression	Patient 3 (see note 2)		Yes*
	Patient 4 (see note 3)		Yes*
Obsessions or compulsions	-		
Nausea or vertigo	-		
Paraesthesia	-		
Lethargy	-		
Weight gain (>4,5 kg)	Patient 1 (see note 4)		Yes
Other	Patient 3 (see note 2)		Yes*

*=resolved with stimulation parameter re-adjustment. **Note 1:** Inadequate pulse stimulator and charger contact, repositioned 4 months after initial surgery. **Note 2:** 37 months post-surgery (2 weeks after stimulation adjustment). **Note 3:** 10 months post-surgery (1 week after adjustment); acute mood change with suicidality, improved within 1 week of re-adjustment. **Note 4:** 6 kg by 6 months post-DBS, spontaneous improvement from month 8 post-DBS to return to baseline. **Note 5:** 24 months post-surgery; akathisia (after stimulation adjustment).