



# “Psychosocial” Outcome After GPI-Deep Brain Stimulation in Tourette`s Syndrome (GTS) – What`s Beyond the Scores and Scales?

Jan H. Mehrkens MD; Berend Feddersen; Kai Boetzel; Norbert Mueller; Sandra Dehning  
Department of Neurosurgery, Department of Psychiatry and Psychotherapy, Department of Neurology,  
Ludwig-Maximilians-University, Munich, Germany



## Introduction

Up to now there is only scarce data available on “psychosocial outcome after DBS. Aim of the present naturalistic observational study therefore was to focus on the “psychosocial changes” in 5 GTS-patients` life after GPI-DBS (follow-up at least 12 months) not assessed in the standard “Tourette-specific” scores

## Methods

DBS-electrodes were implanted stereotactically (propofol anesthesia) in the posteroventrolateral (motor part) of the Globus Pallidus internus (GPI) exactly as established for dystonia. Localisation was verified by MRI. Outcome was assessed by Clinical Global Impression (CGI), Tourette Syndrome Global Scale (TSGS), and the Yale Global Tic Severity Scale (YGTSS)), the Verbal Learning Memory Test (VLMT) and the Stroop-Test. Moreover, any relevant “psychosocial changes” were assessed including the Global Assessment of Functioning Scale (GAF). Median follow-up was 24 months (range 12-66 months).

## Results

Mean age at surgery was 34 years (range 26-44 years, 3 female/2 male). There was a significant (p=0.001) tic-improvement in 3/5 patients documented by a reduction in the YGTSS of 88% (tic-free) in Pat. I (12/66 months), 80% in Pat. IV (21/32 months) and 60% in Pat. V (12 months), respectively. Functional outcome assesed with the GAF revealed an improvrmnt in all responders (from 53.75 ± 7.5 on admission to 76.25 ± 13.77 at last follow-up) with a mean improvement of 22.5 ± 20.21 (see Fig. 3). In addition to the improvement assesed by the "functional sclaes", all of the responders experienced significant psychosocial changes. Pat. I: once tic-free the patient was deprived of her “stable” everyday-life which had consisted of regular physician-care leading to a severe episode of depression. Pat. IV: after being-off any “GTS-specific” medication, the patient became pregnant and gave birth to a healthy baby-boy. Pat. V: struck with self-inflicted blindness, the patient realized this severe deficit with the tics no longer dominating his life – he is now in search of a partner for life.

## Conclusions

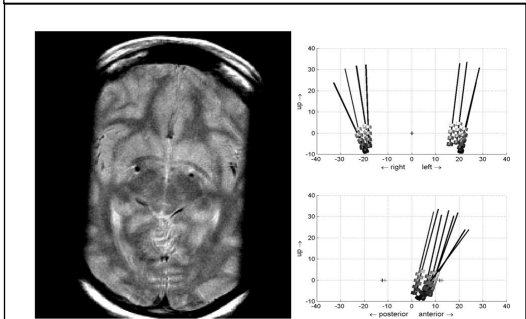
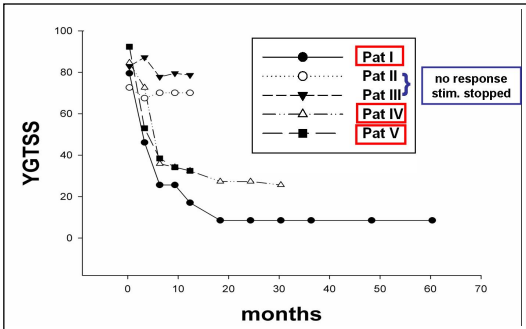
GPI-DBS seems to offer a promising therapy in otherwise intractable GTS in selected patients. However, “success” must not only be assessed by the classic tic-scales but must also take into account the possible subsequent significant psychosocial changes.

## Learning Objectives

By the conclusion of this session, participants should be able to: Comprehend that there is much more to assess in the follow-up of GTS patients after GPi-DBS than just the standard tic-scores and scales

## References

Burd L, Kerbeshian PJ, Barth A, Klug MG, Avery PK, Benz B. Long-term follow-up of an epidemiologically defined cohort of patients with Tourette syndrome. J Child Neurol 2001;16: 431-437.  
Muller-Vahl KR, Cath DC, Cavanna AE et al. European clinical guidelines for Tourette syndrome and other tic disorders. Part IV: deep brain stimulation. Eur Child Adolesc Psychiatry 2011;20: 209-217.  
Cavanna AE, et al. The Gilles de la Tourette syndrome-quality of life scale (GTS-QOL): development and validation. Neurology 2008;71: 1  
Leckman JF, et al. The Yale Global Tic Severity Scale: initial testing of a clinician-rated scale of tic severity. J Am Acad Child Adolesc Psychiatry 1989;28: 566-573.  
Elstner K, Selai CE, Trimble MR, et al. Quality of Life (QOL) of patients with Gilles de la Tourette's syndrome. Acta Psychiatr Scand 2001;103:  
Muller-Vahl K, et al. Health-related quality of life in patients with Gilles de la Tourette's syndrome. Mov Disord 2010;25: 309-314.  
Gorman DA, Thompson N, Plessen KJ, Robertson MM, Leckman JF, Peterson BS. Psychosocial outcome and psychiatric comorbidity in older adolescents with Tourette syndrome: controlled study. Br J Psychiatry 2010;197: 36-44.  
Dehning S, Mehrkens JH, Muller N, Botzel K. Therapy-refractory Tourette syndrome: beneficial outcome with globus pallidus internus deep brain stimulation. Mov Disord 2008;23: 1300-1302.  
Welter ML, Mallet L, Houeto JL et al. Internal pallidal and thalamic stimulation in patients with Tourette syndrome. Arch Neurol 2008;65:



Active leads within pvl GPI:3.1 mm (range 2.2-5.2 mm) anterior to the midcommisural (MC) point20.8 mm (range 18.0-24.2 mm) lateral to the midline of the 3rd ventricle5.3 mm (range 3.0-6.0 mm) below the AC-PC plane .

