

# MR-Guided High Intensity Focused Ultrasound for the treatment of tremor-dominant Parkinson's disease – first experience

Ronald Bauer <sup>1</sup>, Beat Werner <sup>2</sup>, Stefan Hägele-Link <sup>3</sup>, Georg Kägi <sup>3</sup>,  
Stephan Nitschke <sup>3</sup>, Florian Brugger <sup>3</sup>, Moritz v. Specht <sup>4</sup>, Ernst Martin <sup>2</sup>

<sup>1</sup> Klinik für Neurochirurgie, Kantonsspital St. Gallen

<sup>2</sup> Zentrum für MR Forschung, UNI-Kinderspital Zürich

<sup>3</sup> Klinik für Neurologie, Kantonsspital St. Gallen

<sup>4</sup> Klinik für Anästhesie, Kantonsspital St. Gallen



# Case report

patient (m,45),  
with tremor-dominant idiopathic Parkinson's disease,

who showed contraindication to DBS due to bipolar disorder.

During interventions the target was visually focused by MR-image guidance.

In a first step, the correct focal location was verified with low, non-ablative energy, and targeted in the pallido-thalamic tract (*fasciculus thalamicus*).

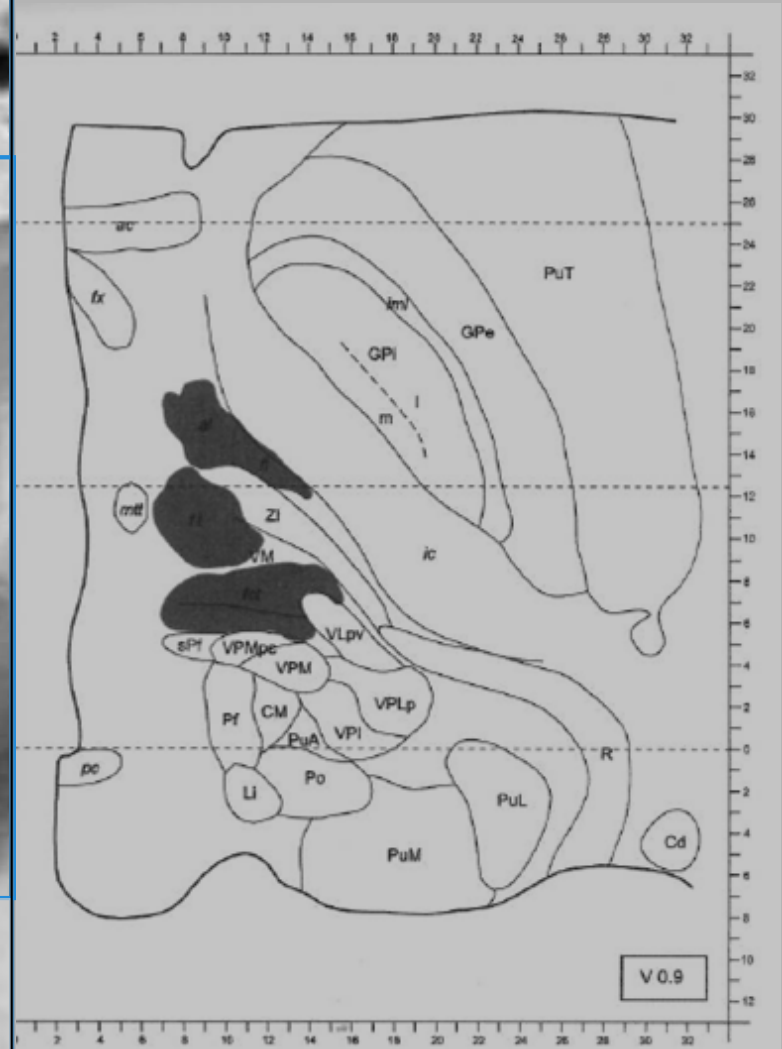
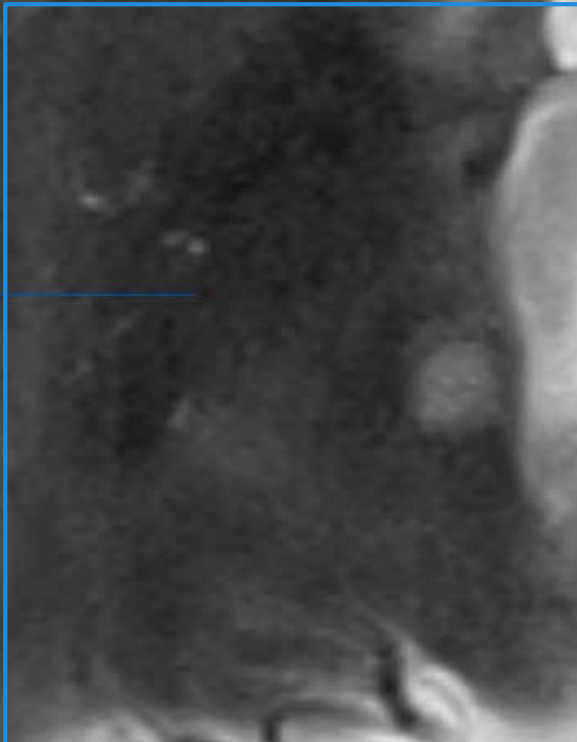
Continuous sonications lasting 15 to 25 seconds each were delivered with stepwise increased acoustic energy up to 13200 J to create thermocoagulations under realtime MR-thermometry.

The sonications resulted in heating to 60° C at the focal point producing a thermal lesion.



L

R



target:  
fasciculus thalamicus

MC            post    1 mm  
                  lat     8-9 mm  
                  inf    1-2 mm



Courtesy A. Morel

08

07

06

05

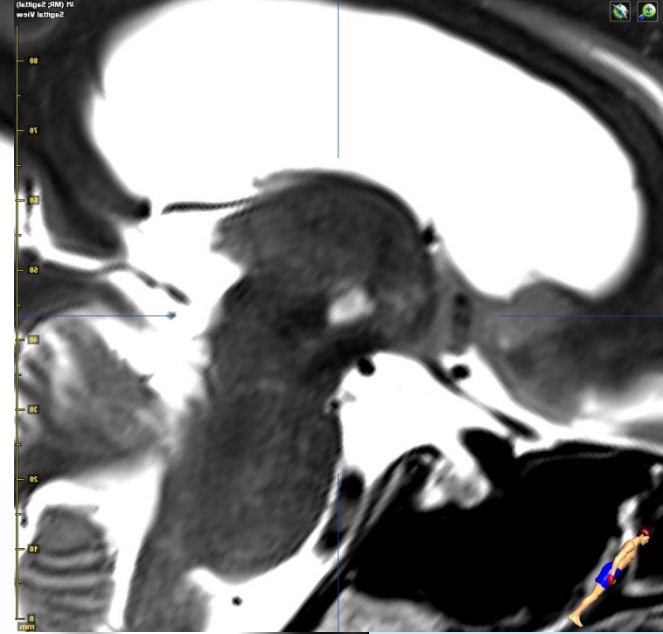
04

03

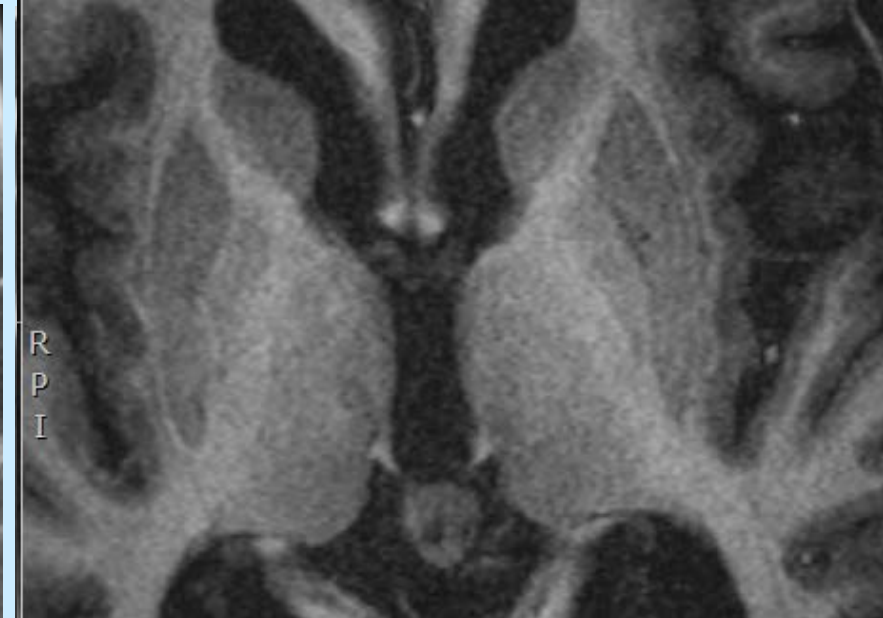
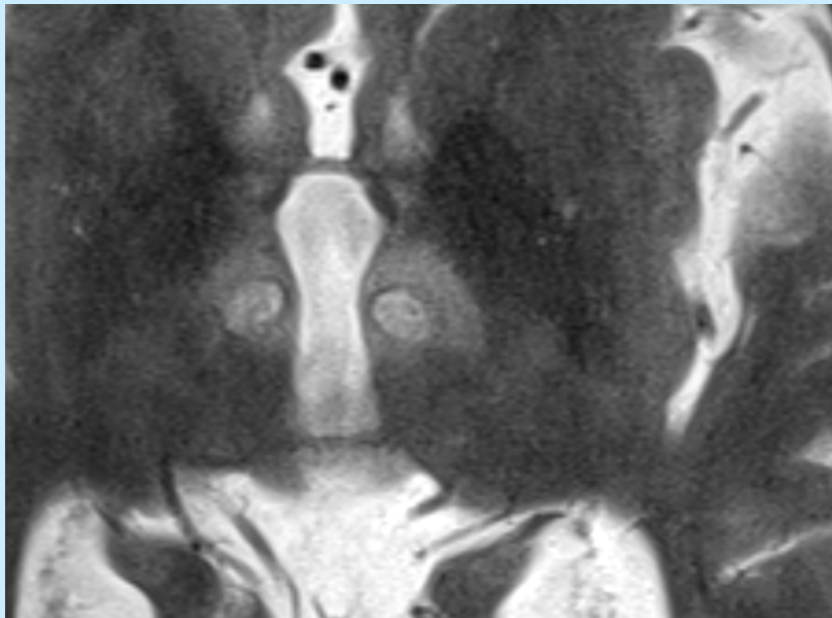
02

01

0 mm



# Dynamic of lesion



48h

3 mo

