Subthalamic Nucleus Deep Brain Stimulation On Asleep Patients With Use Of An Intraoperative Robotic 3D Fluoroscopy For Quality Control

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Subthalamic nucleus deep brain stimulation (STN-DBS) is an effective treatment for refractory Parkinson's disease (PD). We report our results on patients implanted under general anesthesia (GA) using intraoperative robotic 3D fluoroscopy (Artis Zeego; Siemens, Germany).

Ten patients (9 men, one woman; mean age, 57.6 yr; range, 41–67 yr) underwent surgery between October 2013 and January 2015. The mean duration of PD was 9.2 [1–10] yr. The procedure was performed under GA: placement of the stereotactic frame, implantation of the electrodes (Medtronic, USA) and 3D intraoperative fluoroscopic control fused with the preoperative magnetic resonance imaging (MRI). All patients were evaluated preoperatively and 6 months postoperatively.

The mean operative time was 240.1 (185–325) min. The mean Unified Parkinson's Disease Rating Scale (UPDRS) II OFF medication decreased from 23.9 preoperatively to 15.7 postoperatively. The mean OFF medication UPDRS III decreased from 41 to 11.6 and the UPDRS IV decreased from 10.6 to 7. The mean preoperative and postoperative L-Dopa doses were 1,178.5 and 696.5 mg, respectively. We observed on episode of transient confusion (24 h) and one internal pulse generator (IPG) infection.

The direct targeting of the STN under GA (with clinical results similar with awake patients) combined with the intraoperative control of the leads position using the Artis Zeego decrease significantly the surgery duration which could be associated with a reduced rate of complications (infection, loss of patient collaboration).