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To sleep or not to sleep during deep brain stimulation surgery for Parkinson disease

Tipu Z Aziz

Nuffield Department of Surgical Sciences, University of Oxford, UK.

Over the last two decades or more Functional Neurosurgery from being dormant had become one of the fastest growing subspecialties. Two schools of practice emerged with time. To avoid causing neurological deficits prior to lesioning, patients were done awake, with one school confirming target by stimulation to elicit the desired response and a second school of utilising micro-electrode recordings. This was necessary as targeting was based on ventriculography in relation to the mid-commissural point as landmark. Such targeting had errors of up to 5mm. The advent of CT stereotaxy eliminated the need for ventriculography but target localisation still required awake surgery for physiological confirmation be it stimulation or MER. Modern MRI imaging has transformed functional neurosurgery. Certain targets have become directly visible to plan surgery pre-operatively such as the STN and GPi though thalamic targets are still acquired proportionately to land marks such as the MCP. Even so with modern imaging processing, even thalamic implants are done with direct targeting. Given this what is the role of surgery with patients awake? Well established targets such as the STN and GPi are clearly visible on modern imaging and with decades of experience, the best site to implant are known. There is also patient choice in that some people would not be willing to undergo awake surgery. Therefore awake surgery may not be possible. Development of telemetric pacemakers now also make it possible to research disease states in the long term and possibly improve surgical outcomes. There are few studies from a single centre comparing awake vs asleep surgery and those that are available do not show advantages to the former and may have more complications. In conclusion, we believe that except in certain indications awake surgery and MER are no longer necessary in DBS Functional Neurosurgery for PD.

aziz.tipu@gmail.com