

Neurosurgeon uses depth electrodes for speech mapping

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This is Jonathan Miller, M.D., Director of Functional and Restorative Medicine at University Hospitals Case Medical Center. Credit: University Hospitals Case Medical Center

At the 2014 American Association of Neurological Surgeons Annual Meeting, neurosurgical researchers from University Hospitals (UH) Case Medical Center presented results from a small study looking at deep brain electrode implantation as a possible alternative to the traditional WADA test used prior to epilepsy surgery.

The WADA test is considered the gold standard for identifying the side of the brain for speech dominance. In the WADA test, doctors put one half of a patient's brain to sleep for a few minutes using medication and then have the patient read words and look at pictures. Then the procedure is repeated with the other half of the brain asleep. How well

the patient retains the memory and is able to say what she saw, depending on which side of the brain was asleep, allows doctors determine which side is dominant for language and memory. The information is important for determining if surgery can be performed without harm to language and memory functions. (WADA is named for the Japanese physician who first performed it.)

Jonathan Miller, MD, a neurosurgeon, Director of Functional and Restorative Medicine at UH Case Medical Center, and Assistant Professor of Neurosurgery at Case Western Reserve University School of Medicine, and colleagues, tested a potential alternative method, called the "Electric WADA," with patients who received deep brain [implants](#).

With four patients implanted with deep brain electrodes to identify the areas of the brain where their epileptic seizures originated, Dr. Miller was able to stimulate each side of the brain while the patient read words. He found that their speech was halted upon stimulation on the speech dominant side of the [brain](#), but unaffected by stimulation on the non-dominant side. And there were no adverse events of implantation or stimulation.

"Brain mapping using depth electrodes represents a potential alternative to the WADA test in cases where the side of speech dominance is uncertain," said Dr. Miller. "The main advantage for the implantation is for patients who will have electrodes implanted in that location anyway, so that WADA can be avoided, or for small children who cannot cooperate with the traditional WADA."

Provided by University Hospitals Case Medical Center

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