

Better memory with laser surgery for epilepsy

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A laser-based procedure for people with medication-resistant epilepsy may result in better memory function than standard surgery, while still providing comparable seizure control rates, doctors say.

Daniel Drane, PhD, assistant professor of neurology at Emory University School of Medicine presented the first data on cognitive outcomes from stereotactic laser ablation (SLA) of the hippocampus at the American Epilepsy Society's annual meeting this week in Washington, DC.

"This procedure may allow more people with temporal lobe epilepsy to gain seizure freedom, but retain their ability to work and function at their optimal level," says Drane.

The study found that there was no decline in episodic memory following laser ablation, although such decline was often seen in [patients](#) undergoing standard open resections. In addition, patients undergoing SLA were more likely to exhibit improved memory functioning than standard resection patients.

Researchers attribute this to the laser technique that preserves more brain regions and connections. Traditional surgery typically cuts through other [temporal lobe](#) regions and white matter pathways.

Using pre- and post-surgical neuropsychological data at six months following surgery, the research compared the cognitive outcomes for 10 patients with [temporal lobe epilepsy](#) (TLE) who had standard open

surgical treatment with the [cognitive outcomes](#) of 7 patients who underwent SLA. The study found that the cognitive declines were much less severe following [laser ablation](#) than standard approaches.

"Given the presumed importance of the hippocampus in [episodic memory](#), we were surprised by the absence of any decline in the SLA group. This suggests that our understanding of the function of this brain structure may be incomplete, and that being able to perform such a precise resection may help us learn more about brain regions in a manner that was never before possible in humans," says Drane. "Overall, from a clinical standpoint, if we continue to see better outcomes in patients undergoing SLA, this technique could have a huge impact in brain surgery."

Drane previously presented naming and object recognition outcome data for the 7 SLA patients compared to 33 open resection patients from Emory and the University of Washington at the International Epilepsy Congress in Montreal, Canada. No SLA patients declined on either of these categories of function, although such deficits were again a frequent occurrence in open resection patients, with 25 of 33 patients showing declines.

Emory neurosurgeons were the first to perform SLA in adults and have completed the most procedures of this kind to date (22) worldwide, according to Robert Gross, MD, PhD, professor of neurosurgery and director of stereotactic and functional neurosurgery and epilepsy surgery at Emory University School of Medicine.

"Patients want to have their seizures eliminated, but don't want to have to 'give up anything' to get there. In the [epilepsy](#) community, we aim for 'no seizures, no side effects', and thus by minimizing the adverse cognitive effects from surgery we get closer to that goal, with the potential for better quality of life after surgery," says Gross.

In addition to the cognitive benefits, the SLA technique is minimally invasive and is therefore more cosmetically appealing. It also decreases the length of hospital stay and is less painful.

Provided by Emory University

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