

Laser thermal therapy ends patient's seizures

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After suffering from uncontrollable epileptic seizures for more than 15 years, a new laser therapy has given a 48-year-old Houston-area woman a life without seizures.

Priti Vyas recently became the first adult in Texas, and only second in the world, to undergo a minimally invasive investigational laser thermal procedure to destroy a lesion in her brain that caused the refractory seizures, or seizures that cannot be controlled by medication.

Physicians involved in an investigator-initiated study at the Methodist Neurological Institute and The Methodist Hospital Research Institute in Houston used an MRI-guided laser ablation system to destroy the part of the brain that caused Vyas' seizures without damaging surrounding tissue. Instead of the recovery involved in the traditional open [brain surgery](#), or craniotomy, the patient went home two days later with a small stitch in her head.

Because the laser therapy uses MRI, this procedure does not expose the patient to radiation or require a brain flap, which is the large skull opening in traditional craniotomies. Approximately 40 percent of all [epilepsy patients](#), including this patient, do not respond to available antiepileptic treatment, and their quality of life is significantly impacted.

"While many patients with uncontrollable seizures often undergo surgical removal of the part of the brain causing the seizures, complete removal of the seizure-prone area is often unlikely because of the proximity to other areas of the brain that control major functions such as speech,

movement, sensation and vision," said Dr. Amit Verma, the study's principal investigator. "In Mrs. Vyas, the area causing her seizures was close to the area controlling her vision, so using the [laser therapy](#) helped us burn the problem area without harming surrounding tissue."

Previous studies have demonstrated potential for thermal ablation as an [alternative treatment](#) option for epilepsy patients who did not respond well to medication. However, the technology used in prior studies did not allow researchers to accurately monitor heat levels and preserve surrounding tissue.

The MR-guided laser ablation system used in this study has already been successfully used on several pediatric epilepsy patients, and is a minimally-invasive way to eliminate the area causing the [seizures](#). Methodist neurosurgeon Todd Trask implanted a laser probe in the patient's [brain](#) through a hole the size of a pen before the patient was transferred to an MRI machine where the laser thermal therapy was performed. During the heating process, the Methodist study team compiled MRI images and data from those images were used to display temperatures around the probe to make sure the targeted tissue receives proper heating and that normal tissues around the target were not treated.

"There are no radiation-related side effects, and we can see in real time the actual burning of [lesions](#)," said Trask. "This particular laser thermal therapy works best on well-defined lesions. [Epileptic seizures](#) caused by vascular malformations or by unknown causes should still be treated with medications or traditional surgery."

Provided by Methodist Hospital System

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