

Focal to bilateral tonic-clonic seizures treatment

Many convulsive seizures can be controlled with medication.

If a person has convulsive seizures that are not well controlled with medication, testing may be needed to see whether they might be focal to bilateral tonic-clonic seizures that begin in a limited area of the brain.

If they do begin in one area, surgery or neurostimulation could be an option for treatment.

Devices and diet therapy are also used to treat focal to bilateral tonic-clonic seizures (previously known as secondarily generalized seizures).

Evidence has been provided that the [subiculum](#) may play an important role in the generation of [seizures](#). [Electrostimulation](#) at this target has been reported to have [anticonvulsant](#) effects in kindling and [pilocarpine rat models](#), while in a clinical study of [hippocampal deep brain stimulation](#) (DBS), contacts closest to the subiculum were associated with a better anticonvulsive effect.

Vázquez-Barrón et al. from the Unit of Functional Neurosurgery, Stereotaxy and Radiosurgery, General Hospital of [Mexico City](#), evaluated the effect of Electrostimulation of the subiculum in patients with refractory [mesial temporal lobe epilepsy](#) (MTLE) who have [hippocampal sclerosis](#) (HS).

Six patients with refractory MTLE and HS, who had [focal impaired-awareness seizures](#) (FIAS) and [focal to bilateral tonic-clonic seizures](#) (FBTCS), had DBS electrodes implanted in the subiculum. During the first month after implantation, all patients were OFF stimulation, then they all completed an open-label follow-up of 24 months ON stimulation. DBS parameters were set at 3 V, 450 μ s, 130 Hz, cycling stimulation 1 min ON, 4 min OFF.

There was a mean reduction of 49.16% (\pm SD 41.65) in total seizure number (FIAS + FBTCS) and a mean reduction of 67.93% (\pm SD 33.33) in FBTCS at 24 months. FBTCS decreased significantly with respect to baseline, starting from month 2 ON stimulation.

[Subiculum stimulation](#) is effective for [focal to bilateral tonic-clonic seizures](#) (FBTCS) reduction in patients with [mesial temporal lobe epilepsy](#) (MTLE) and [hippocampal sclerosis](#) (HS), suggesting that the [subiculum](#) mediates the generalization rather than the genesis of mesial temporal lobe seizures. Better results are observed at longer follow-up times ¹⁾.

¹⁾

Vázquez-Barrón D, Cuéllar-Herrera M, Velasco F, Velasco AL. Electrostimulation of Subiculum for the Treatment of Refractory Mesial Temporal Lobe Epilepsy with Hippocampal Sclerosis: A 2-Year Follow-Up Study. *Stereotact Funct Neurosurg*. 2020 Oct 28;1-8. doi: 10.1159/000510295. Epub ahead of print. PMID: 33113540.

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