Cleveland Clinic Innovations

PRODUCT

Stereo-Thermo-Lesioning (STL) System using multi-contact electrodes with thermocouples and pulse generator device for creation of thermo-lesions in highly specific epileptogenic foci.

INDICATIONS

Focal medically refractory epilepsy, CNS/neurological disorders, abnormal neuronal networks.

VALUE PROPOSITION

- Minimally invasive alternative to resective surgery.
- Precisely maps epileptogenic foci and selectively ablates culprit epileptogenic networks.
- Creates targeted lesions at patient's bedside without general anesthesia and operating rooms.
- Reduced cost, morbidity, and failure rates versus current surgical options.

DEVELOPMENT STAGE

Proof of concept established.

INTELLECTUAL PROPERTY

- US: 11484711B2

CONTACT INFORMATION

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Stereo-Thermo-Lesioning (STL) of Neuronal Networks for the Treatment of Neurological Conditions

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PROBLEM/OPPORTUNITY

Epilepsy is a prevalent neurological disorder, affecting 50M people globally, up to 30% of epilepsy patients have medically refractory epilepsy (MRE) with seizures and minimally responsive to anti - epileptic drugs. Sources indicate 40% of patients with MRE require operative intervention for potential seizure ablation or reduction. These surgical interventions currently have 50% failure rate and high morbidity. The global epilepsy surgery market size was valued at US$1.06B in 2022. It is expected to reach US$1.77B by 2031.

SOLUTION/PRODUCT

The Stereo-Thermo-Lesioning (STL) Method is a minimally invasive epilepsy treatment approach. Small disposable multi-function electrodes capable of recording, stimulating and lesioning under precise temperature control are placed at specific locations on the brain's surface and deeper structures. This integrated SEEG and radiofrequency ablation approach allows doctors to map the 3D electrical patterns in neuronal networks related to seizures without needing additional MRI guidance. Unlike tissue removing surgery, STL uses heat to make tiny scars or lesions to stop faulty signals, with built in temperature measurement and computational modeling. This offers targeted treatment with minimal invasiveness due to the integrated capabilities of the recording, stimulating, and ablating electrodes which can modify seizure-related areas precisely.