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STEERABLE THERMOABLATION PROBE FOR IMPROVED ACCESS TO BRAIN LESIONS

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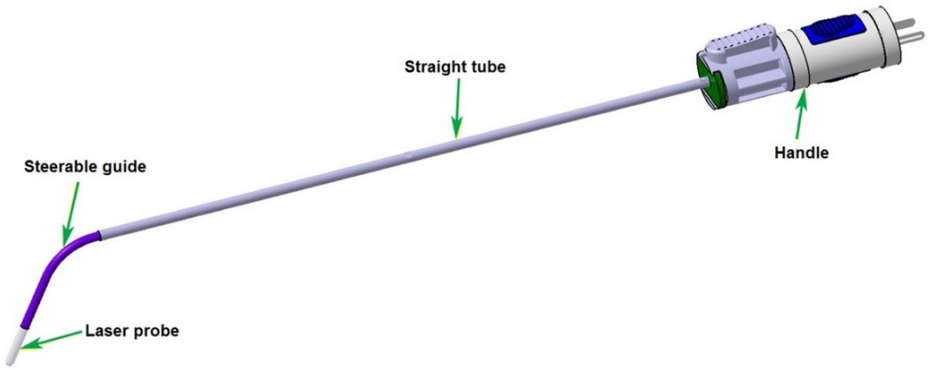
Value Proposition: *Non-sweeping, steerable guide for laser probes used in thermo-ablative systems to improve treatment of brain tumors.*

Technology Description

Researchers at Washington University in St. Louis have developed a steerable device that can be integrated into existing thermoablation systems, enhancing the insertion of a neurosurgical laser probe, to treat abnormal brain lesions. Thermoablation is a more targeted and less disruptive method for treating lesions than chemotherapy, radiation therapy, and surgical excision. However, current probes used in existing thermoablation technologies can only move in one direction and are too large or irregularly shaped.

This new mechanism allows the surgeon to rotate, retract, and redeploy the laser probe along both a linear and a curved trajectory, lessening the potential for the probe to “sweep” tissue between the backbone of the device and the end point of the curved tube as it is deployed; thus, minimizing damage to the intervening brain.



Above Figure: Rendering of steerable thermoablation device, featuring a telescopically slidable laser extending from a pre-curved guide and straight, rigid sheath.

Stage of Research

Early prototype

Publications

Dadey DY, Kamath AA, Smyth MD, Chicoine MR, Leuthardt EC, Kim AH. Utilizing personalized stereotactic frames for laser interstitial thermal ablation of posterior fossa and mesiotemporal brain lesions: a single-institution series. Neurosurg Focus. 2016 Oct;41(4):E4. doi: 10.3171/2016.7.FOCUS16207. PMID: 27690652.

Applications

Treatment of brain tumors

Key Advantages

- Non-sweeping, steerable, push-driven guide for a laser probe
- Can be deployed, retracted, rotated, and then redeployed multiple times
- Does not interfere with the thermometry readings taken during Laser Interstitial Thermal Therapy procedures and does not disrupt the existing surgical workflow

Patents

Issued Patent: US10751123B2 - Thermoablation probe

Related Web Links – Eric Leuthardt Profile**;** Leuthardt Lab