Washington University in St. Louis
Office of Technology Management

INTRAOPERATIVE MAPPING TOOL FOR IDENTIFYING FUNCTIONAL BRAIN AREAS IN ANESTHETIZED PATIENTS

Breshears, Jonathan, Leuthardt, Eric

Weilbaecher, Craig

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Value Proposition: *New technique for examining active brain areas in unconscious neurosurgical patients.*

Technology Description

Researchers at Washington University in St. Louis have developed a new process that includes a new use for existing electrocorticographic (ECoG) grids, an amplifier, and accompanying software that can identify language cortex in unconscious neurosurgical patients. Existing techniques to examine brain activity include EEG, PET, fMRI, phMRI, and TMS. These tests are done prior to surgery, increasing the chance for the brain to naturally deform between the time the imaging was done and the time of surgery.

Currently, there is no technique that enables a surgeon to identify functioning brain areas in unconscious neurosurgical patients. This invention would allow surgeons to identify the language and motor cortex in situ, in unconscious patients who are not candidates for awake craniotomy (i.e. children, patients with sleep apnea, patients with psychological disease), and would serve as an adjunct intraoperative mapping tool for patients who are candidates for awake craniotomy; thus, providing more accurate information to surgeons.

Stage of Research

Proof of concept: Recorded electrical potentials directly from the exposed cortex of seven epileptic patients undergoing invasive ECoG monitoring during induction and recovery of anesthesia.

Applications

- Mapping of functional brain areas
- Awake craniotomy

Key Advantages

- Enables the identification of the language cortex in unconscious patients
- **Can** efficiently identify important functional networks (i.e. motor and speech sites) in conjunction with anatomic navigation
- Better localization of functional brain areas, thus resulting in safer surgery with decreased incidence of post-op neurological deficits
- Fast and less stressful for patients than awake craniotomy

Patents

US Patent 8,761,869

Related Web Links – Eric Leuthardt Profile; Leuthardt Lab