



**Fig. 3 – (a) Selective resection of the epileptogenic zone in the right frontal lobe (red arrows) and BCFC in the central (blue arrows) and the electrocoagulated cortex presented red and white stripes at regular intervals. (b) Brain specimen showing the tubers (circle). (c) Immunohistology image showing giant cells (balloon cells) and dysmorphic neurons.**

**Conclusions:** The combination therapy of foci resection and BCFC is an effective and safe surgical approach for the treatment of TSC-associated epilepsy involving eloquent cortex.

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How do I do it? Selective amygdalohippocampectomy

Navigation-assisted trans-inferotemporal cortex selective amygdalohippocampectomy for mesial temporal lobe epilepsy

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**Purpose:** To achieve satisfactory memory outcomes, we hypothesized that preserving the temporal stem might play an important role. To preserve the temporal stem, we developed a minimally invasive surgical procedure, “neuronavigation-assisted trans-inferotemporal cortex SAH” (TITC-SAH), performed via a small cortical incision in the middle or inferior temporal gyrus. We analyzed outcomes of the procedure in terms of both seizure control and memory function.

**Methods:** TITC-SAH was performed in 20 patients with MTLE. The inferior horn of the lateral ventricle was approached via the inferior or middle temporal gyrus along the inferior temporal sulcus under neuronavigation guidance. The hippocampus was dissected in a subpial manner and resected en bloc together with the parahippocampal gyrus. During

follow-up for more than 1 year, seizure control in the first year of follow-up and memory function at 6 months postoperatively were evaluated using the International League Against Epilepsy (ILAE) classification system and Wechsler Memory Scale-Revised (WMS-R), respectively.

**Results:** One year after TITC-SAH, 17 of the 20 patients were seizure-free (ILAE class 1), 2 experienced auras only (ILAE class 2), and 1 experienced 3 seizures per year (ILAE class 3). Verbal memory improved significantly and improvements were seen regardless of whether the SAH was on the language-dominant or non-dominant hemisphere.

**Conclusion:** Navigation-assisted TITC-SAH performed for MTLE via a cortical incision in the middle or inferior temporal gyrus offers a simple, minimally invasive procedure that appears to yield excellent outcomes in terms of seizure control and improvement of memory function.

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High and low frequency oscillations in epileptic seizures



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**Objectives:** The correlation between the amplitude of higher frequency component (30–150 Hz) and phase of lower frequency component interacts to brain activities. This phenomenon is called phase-amplitude coupling (PAC) and it may play an important role within brain for information processing. We hypothesizes that alternation of PAC would correlate epileptic attacks.

**Method:** We included 7 patients who had diagnosed as lateral temporal epilepsy with non-invasive studies. The video-electroencephalography with chronic intracranial electrodes (V-iEEG) was performed in all 7 patients. V-iEEG was recorded for 7–14 days continually including ictal and inter-ictal periods with the sample rate of 10,000 Hz. PAC, that is between the phase of low frequency components (theta, alpha, beta: 4–30 Hz) and the amplitude of high frequency components (high-gamma: 80–130 Hz), was analyzed using MATLAB (ver.2013b). The strength of PAC was computed as synchronization index (SI). Mean SI in every 1 min was shown serially during the long-term examination including both ictal and inter-ictal periods.

**Result:** Although SI scores were stable during inter-ictal period, significantly higher SI scores were observed during peri-ictal periods compared to inter-ictal periods.

**Conclusion:** Alteration of CFC should correlate the epileptic attack in patients with lateral temporal epilepsy. We conclude that CFC might be a parameter of prediction of epileptic seizure and that it would contribute to investigate the pathology of epilepsy.

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