Depth Electrode Guided Anterior Insulectomy: 2-Dimensional Operative Video

Mauricio Mandel, MD, PhD ^{*,‡}, Layton Lamsam, MD^{*,‡},
Pue Farooque, DO[‡], Dennis Spencer, MD^{*,‡},
Eyiymisi Damisah, MD^{*,‡}

^{*}Department of Neurosurgery, Yale New Haven Hospital, New Haven, Connecticut, USA; [‡]Yale Comprehensive Epilepsy Center, New Haven, Connecticut, USA

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Correspondence: Mauricio Mandel, MD, PhD, Department of Neurosurgery, Yale New Haven Hospital, Yale Comprehensive Epilepsy Center, Yale School of Medicine, 333 Cedar St, PO Box 208082, New Haven, CT 06520-8082, USA. Email: mauricio.mandel@gmail.com; Twitter: [@dr_mmandel](https://twitter.com/dr_mmandel)

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The insula is well established as an epileptogenic area.¹ Insular epilepsy surgery demands precise anatomic knowledge²⁻⁴ and tailored removal of the epileptic zone with careful neuromonitoring.⁵ We present an operative video illustrating an intracranial electroencephalogram (EEG) depth electrode guided anterior insulectomy.

We report a 17-yr-old right-handed woman with a 4-yr history of medically refractory epilepsy. The patient reported daily nocturnal ictal vocalization preceded by an indescribable feeling. Preoperative evaluation was suggestive of a right frontal-temporal onset, but the noninvasive results were discordant. She underwent a combined intracranial EEG study with a frontal-parietal grid, with strips and depth electrodes covering the entire right hemisphere. Epileptiform activity was observed in

contact 6 of the anterior insula electrode. The patient consented to the procedure and to the publication of her images.

A right anterior insulectomy was performed. First, a portion of the frontal operculum was resected and neuronavigation was used for the initial insula localization. However, due to unreliable neuronavigation (ie, brain shift), the medial and anterior borders of the insular resection were guided by the depth electrode reference. The patient was discharged 3 d after surgery with no neurological deficits and remains seizure free.

We demonstrate that depth electrode guided insular surgery is a safe and precise technique, leading to an optimal outcome.

KEY WORDS: Insula, Insulectomy, Intracranial EEG, sEEG, Epilepsy

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