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Intraoperative electrical stimulation in awake craniotomy: methodological aspects of current practice.

Szelényi A, Bello L, Duffau H, Fava E, Feigl GC, Galanda M, Neuloh G, Signorelli F, Sala F; Workgroup for Intraoperative Management in Low-Grade Glioma Surgery within the European Low-Grade Glioma Network.

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There is increasing evidence that the extent of tumor removal in low-grade glioma surgery is related to patient survival time. Thus, the goal of resecting the largest amount of tumor possible without leading to permanent neurological sequelae is a challenge for the neurosurgeon. Electrical stimulation of the brain to detect cortical and axonal areas involved in motor, language, and cognitive function and located within the tumor or along its boundaries has become an essential tool in combination with awake craniotomy. Based on a literature review, discussions within the European Low-Grade Glioma Group, and illustrative clinical experience, the authors of this paper provide an overview for neurosurgeons, neurophysiologists, linguists, and anesthesiologists as well as those new to the field about the stimulation techniques currently being used for mapping sensorimotor, language, and cognitive function in awake surgery for low-grade glioma. The paper is intended to help the understanding of these techniques and facilitate a comparison of results between users.

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