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Functional Mapping for Glioma Surgery, Part 1: Preoperative Mapping Tools

[Sebastian Ille](#)¹, [Sandro M Krieg](#)²

Affiliations

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Abstract

Although intraoperative mapping of brain areas was shown to promote greater extent of resection and reduce functional deficits, this was shown only recently for some noninvasive techniques. Yet, proper surgical planning, indication, and patient consultation require reliable noninvasive techniques. Because functional magnetic resonance imaging, tractography, and neurophysiologic methods like navigated transcranial magnetic stimulation and magnetoencephalography allow identifying eloquent areas prior to resective surgery and tailor the surgical approach, this article provides an overview on the individual strengths and limitations of each modality.

Keywords: Language; MEG; Mapping; Motor function; Neuropsychology; Preoperative; fMRI; nTMS.

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