

Precentral gyrus glioma

Pre and intraoperative [brain mapping](#), intraoperative [neuromonitoring](#) (IOM), and [awake surgery](#) increase safety, which allows resection of most of [Precentral gyrus glioma](#) with a considerably low rate of postoperatively new deficits.

In specialized centers, most highly eloquent gliomas are eligible for surgical resection with an acceptable rate of surgery-related deficits; therefore, they should be referred to specialized centers.

¹⁾

Wunderlich et al. used [positron emission tomography](#) and [transcranial magnetic stimulation](#) for presurgical monitoring of motor hand function in six patients with [gliomas](#) of the [precentral gyrus](#). All patients were able to perform finger movements of the contralesional hand.

Movement-related increases of the regional cerebral blood flow occurred only outside the tumor in surrounding brain tissue. Compared with the contralateral side, these activations were shifted by 20 +/- 13 mm (standard deviation) within the dorsoventral dimension of the precentral gyrus. This shift of cortical hand representation could not be explained by the deformation of the central sulcus as determined from the spatially aligned magnetic resonance images but was closely related to the location of the maximal tumor growth. Dorsal tumor growth resulted in ventral displacement of motor hand representation, leaving the motor cortical output system unaffected, whereas ventral tumor growth leading to dorsal displacement of motor hand representation compromised the motor cortical output, as evident from transcranial magnetic stimulation. In two patients, additional activation of the [supplementary motor area](#) was present.

The data provide evidence for the reorganization of the human [motor cortex](#) to allow for preserved hand function in Grade II [astrocytomas](#) ²⁾.

Treatment

see [Precentral gyrus glioma treatment](#).

Case series

[Precentral gyrus glioma case series](#).

¹⁾

Krieg SM, Schnurbus L, Shibani E, Droese D, Obermueller T, Buchmann N, Gempt J, Meyer B, Ringel F. Surgery of highly eloquent gliomas primarily assessed as non-resectable: risks and benefits in a cohort study. *BMC Cancer*. 2013 Feb 2;13:51. doi: 10.1186/1471-2407-13-51. PubMed PMID: 23374675; PubMed Central PMCID: PMC3583679.

²⁾

Wunderlich G, Knorr U, Herzog H, Kiwit JC, Freund HJ, Seitz RJ. Precentral glioma location determines the displacement of cortical hand representation. *Neurosurgery*. 1998 Jan;42(1):18-26; discussion 26-7. PubMed PMID: 9442499.

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Last update: **2024/06/07 02:59**

