

Intracranial meningioma cognitive deficit

The majority of [intracranial meningioma](#) patients suffer from presurgical [cognitive deficits](#). Since meningiomas do not directly damage the [brain](#), this is presumably caused by a functional integrity reduction of the surrounding brain [tissue](#) through [perilesional edema](#) and/or [mass effect](#) of the tumor.

Meningioma patients are characterised by long term deficits in [neurocognitive](#) functioning that can partly be attributed to the use of [antiepileptic drugs](#) and tumour location but not to the use of [radiotherapy](#) ¹⁾.

Current recommendations stress the need for cognitive parameters to be integrated in the evaluation of outcomes for intracranial meningioma surgery.

Patients with skull base (anterior and middle fossa) and convexity (anterior and posterior) meningiomas (n = 54) underwent neuropsychological examination prior to and 1 year after surgery. A control group (n = 52) of healthy volunteers matched for age, sex, and education underwent the same examination. Assessments included [executive functions](#), memory, and motor functions with standardized testing. Patients with convexity meningiomas were clinically assessed for parietal association cortex functions.

All patients performed significantly worse ($p < 0.05$) in most neurocognitive domains than controls. The skull base group showed more disturbances in memory than the convexity group ($p < 0.05$). The anterior convexity group showed more deficits in executive function than the posterior convexity group, which presented with parietal association cortex deficits. Verbal deficits were more pronounced in the left hemisphere than in the right hemisphere. Patients with a large tumor (> 4 cm) had more severe neurocognitive deficits than those with a small tumor (< 4 cm). Postoperatively, patients showed no deterioration in neurocognitive function. Instead, significant improvement ($p < 0.05$) was observed in some executive, motor, and parietal association cortex functions.

According to the authors' findings, intracranial meningiomas may cause neurocognitive deficits in patients. Surgery does not cause a deterioration in cognitive function; instead, it may lead to improvements in some functions. Permanent neuropsychological postoperative deficits should be interpreted as tumor-induced rather than due to surgery ²⁾.

¹⁾

Dijkstra M, van Nieuwenhuizen D, Stalpers LJ, Wumkes M, Waagemans M, Vandertop WP, Heimans JJ, Leenstra S, Dirven CM, Reijneveld JC, Klein M. Late neurocognitive sequelae in patients with WHO grade I meningioma. *J Neurol Neurosurg Psychiatry*. 2009 Aug;80(8):910-5. doi: 10.1136/jnnp.2007.138925. Epub 2008 Jul 24. PubMed PMID: 18653549.

²⁾

Liouta E, Koutsarnakis C, Liakos F, Stranjalis G. Effects of intracranial meningioma location, size, and surgery on neurocognitive functions: a 3-year prospective study. *J Neurosurg*. 2016 Jun;124(6):1578-84. doi: 10.3171/2015.6.JNS1549. Epub 2015 Dec 4. PubMed PMID: 26636380.

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