

Neurosurgery. 2025 Jan 29. doi: 10.1227/neu.0000000000003366. Online ahead of print.

# Feasibility, Safety, and Impact of Awake Resection for Recurrent Insular Diffuse Gliomas in Adults

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PMID: 39878468 DOI: [10.1227/neu.0000000000003366](https://doi.org/10.1227/neu.0000000000003366)

## Abstract

**Background and objectives:** The risk-to-benefit ratio of transopercular awake resection for recurrent insular diffuse gliomas is poorly studied. We assessed feasibility, safety, and efficacy of awake surgical resection of recurrent insular diffuse gliomas in patients with previous treatments (resection and/or radiotherapy and/or chemotherapy and/or combination).

**Methods:** Observational, retrospective, single-institution cohort analysis (2010-2023) of 123 consecutive adult patients operated on for an insular diffuse glioma (2021 World Health Organization classification) under awake conditions. Comparison between awake resection for an insular diffuse glioma as first-line treatment (n = 87) and after previous treatments (n = 36).

**Results:** Function-based transopercular awake resection for a recurrent insular diffuse glioma (1) did not increase intraoperative adverse events compared with first-line resection; (2) was associated with a higher rate of intraoperative insufficient cooperation in patients with a previous combined oncological treatment (33.3%), compared with patients with a previous monotherapeutic modality (7.4%), and compared with patients with a first-line surgery (8.1%,  $P = .046$ ); (3) resulted in resection rates similar to those of awake resection at first-line surgery (median 91.9%, vs 90.1%); (4) did not increase surgery-related complications or duration of hospital stay; (5) did not worsen the 6-month Karnofsky Performance Status score, seizure control, and sick leave; (6) did not influence the 6-month sick leave from work, but was associated with longer sick leave in patients with high-grade gliomas (38.0% vs 7.7%,  $P < .001$ ).

**Conclusion:** Function-based transopercular awake resection seems feasible and safe at recurrence of a previously treated insular diffuse glioma, with similar resection rates and outcomes than first-time surgery.

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