

Glioblastoma surgery indications

- Hydrocephalus in surgically treated glioblastoma patients - To treat or not to treat?
- FcRn-silencing of IL-12Fc prevents toxicity of local IL-12 therapy and prolongs survival in experimental glioblastoma
- Treatment mechanism and research progress of bevacizumab for glioblastoma
- Clinical Translation of Hyperpolarized ¹³C Metabolic Probes for Glioma Imaging
- Between-hospital variation in biopsy indication for patients with newly diagnosed glioblastoma in the Dutch Quality Registry for Neurosurgery
- Sonodynamic therapy with a single neoadjuvant, diffuse delivery of low-intensity ultrasound with 5-ALA in treatment naive glioblastoma results in tumor-specific cytotoxic edema and increased apoptosis
- Atrial Bigeminy, a Potential Diagnostic Clue for Glioblastoma
- Challenges and advances in the management of HCMV infections

see [High-grade glioma surgery indications](#).

[Surgical resection](#) is the first-line [glioblastoma treatment](#), aiming to achieve [maximal safe resection](#) while preserving neurological function. The indications for surgery include:

Diagnostic Indications

- **Tissue Diagnosis:** Surgical biopsy or resection is required to obtain histopathological confirmation of glioblastoma.
- **Molecular Profiling:** Enables genetic and molecular testing (e.g., IDH mutation, MGMT promoter methylation) to guide adjuvant therapy.

Therapeutic Indications

- **Maximal Safe Resection (MSR):** The goal is to remove as many tumors as possible to improve survival, reduce mass effect, and enhance the efficacy of adjuvant therapies (radiotherapy and chemotherapy).
- **Relief of Mass Effect:** Surgery is indicated in cases where the tumor is causing significant mass effect, midline shift, or increased intracranial pressure (ICP).
- **Neurological Deterioration:** Surgery may be necessary if the tumor causes worsening neurological deficits or symptoms such as seizures, cognitive decline, or hemiparesis.
- **Cystic or Necrotic Components:** If the tumor contains a large cystic or necrotic portion contributing to symptoms, surgical decompression can provide relief.

Palliative Indications

- **Symptom Relief:** For patients with significant headaches, seizures, or hydrocephalus, debulking surgery may improve quality of life.
- **CSF Flow Obstruction:** In cases where the tumor obstructs cerebrospinal fluid circulation, leading to hydrocephalus, surgery may be needed.

Recurrence

- **Reoperation for Recurrence:** Selected patients with recurrent glioblastoma may benefit from a second surgery, especially if a good performance status (Karnofsky Performance Score > 70) is maintained and tumor location allows safe resection.

Contraindications for Surgery

- **Diffuse Infiltration:** If the tumor diffusely infiltrates eloquent areas (e.g., motor cortex, language centers) where surgery would cause severe deficits, conservative management may be preferred.
- **Poor Performance Status:** Patients with low KPS (< 50-60) may not tolerate surgery well.
- **Multifocal or Deep-Seated Tumors:** Lesions in deep brain structures (e.g., thalamus, basal ganglia) or with widespread multifocal involvement may be less amenable to resection.
- **Severe Comorbidities:** Patients with significant systemic disease (e.g., severe cardiopulmonary conditions) may not be suitable candidates for surgery.

Surgical Approach Considerations - **Awake Craniotomy:** Used for tumors near eloquent areas to maximize resection while preserving function. - **Fluorescence-Guided Surgery:** 5-ALA or fluorescein can improve resection margins. - **Neuronavigation & Intraoperative Monitoring:** Helps in preserving function while maximizing resection.

GTR glioblastoma surgery and adjuvant combined radiochemotherapy (RCT) provides benefits for overall survival in elderly patients. Therapy decision should be made in regard to preoperative evaluation of the functional status instead of biological age ¹⁾.

Registry-based observational studies

A registry-based study examines the variation in biopsy and resection indications for glioblastoma surgery patients across Dutch hospitals and identifies patient- and hospital-related factors associated with the surgical treatment.

Data from all 7443 adults with first-time glioblastoma surgery at 12 hospitals were obtained from the

prospective population-based Quality Registry Neurosurgery in the [Netherlands](#) between [2011](#) and [2021](#). Patients were stratified by either [biopsy](#) or [resection](#). They analyzed variations in the American Association of Anesthesiologists (ASA) classification, [Karnofsky Performance Score](#) (KPS), and gender and age distribution between the different [centers](#). Between-hospital variation in biopsy percentage was analyzed using a funnel plot. [Logistic regression](#) was used to identify associated patient- and hospital-related factors.

32% of the newly diagnosed glioblastoma patients underwent a biopsy, with wide variations between the different centers (23-56%). Patient-related variables such as higher age or ASA classification and lower [KPS](#) were significantly associated with the indication for biopsy. After correction for these factors, between-hospital variation persisted, with two institutes performing more biopsies than expected and one less than expected. Median [overall survival](#) was 12.5 months (95% CI 12.2-12.9) in the resection group and 5.6 months (95% CI 5.1-6) in the biopsy group, with wide variations between the different centers.

A substantial [between-hospital variation](#) in biopsy percentages was found. Patient factors (age, ASA classification, and KPS) but also hospital factors (such as academic setting) impact surgical [decisions](#). Variation persisted also after correction for potential [confounders](#), indicating that other factors play a role in [decision-making](#) ²⁾.

¿ Not good candidates ?

Extensive Dominant lobe glioblastoma multiforme

Large Butterfly gliomas

[Elderly patients](#)

[Karnofsky Performance Score](#) < 70

[Multicentric gliomas](#)

¹⁾

Heiland DH, Haaker G, Watzlawik R, Delev D, Masalha W, Franco P, Machein M, Staszewski O, Oelhke O, Nicolay NH, Schnell O. One decade of glioblastoma multiforme surgery in 342 elderly patients: what have we learned? J Neurooncol. 2018 Aug 3. doi: 10.1007/s11060-018-2964-8. [Epub ahead of print] PubMed PMID: 30076585.

²⁾

Viozzi I, Hannink G, Ardon H, Balvers RK, Bosscher L, van Geest S, Ho VKY, Hovinga K, Kwee L, Tewarie RN, Robe PA, van der Veer O, Wagemakers M, Ter Laan M, De Witt Hamer PC. Between-hospital variation in biopsy indication for patients with newly diagnosed glioblastoma in the Dutch Quality Registry for Neurosurgery. J Neurooncol. 2025 Feb 6. doi: 10.1007/s11060-025-04959-5. Epub ahead of print. PMID: 39913047.

From:

<https://neurosurgerywiki.com/wiki/> - **Neurosurgery Wiki**

Permanent link:

https://neurosurgerywiki.com/wiki/doku.php?id=glioblastoma_surgery_indications

Last update: **2025/02/06 21:51**



