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Eligibility criteria in glioma clinical trials: a systematic review and meta-analysis on selectivity, generalizability, and real-world applicability

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doi: 10.1017/cjn.2025.10290

Background: Glioma trials may use selective criteria, limiting their generalizability to real-world patients. This systematic review and meta-analysis quantifies the prevalence of these criteria and evaluates their impact on trial outcomes, assessing whether reducing selectivity to improve generalizability and applicability is feasible without compromising safety or efficacy. Methods: 51 glioma trials were extracted from the National Clinical Trial (NCT) database on June 1st, 2024. Eligibility criteria were classified as selective—defined as likely to exclude patients who could benefit, or generalizable—justified due to potential harm or trial focus. The selective criteria were analyzed for correlation with median overall survival (mOS). Results: The average number of selective criteria per study was 6.8 (range: 0–14, median: 7). The most common were "No prior malignancy with a specified disease-free period" (N=29), "Exclusion based on Karnofsky score" (N=27), and "No prior brain radiotherapy" (N=16). Meta-analysis showed no significant correlation between the number of selective criteria and mOS (p = .327). Conclusions: Selective criteria are common in glioma trials, particularly exclusions based on prior malignancies, performance status, and past treatments. However, their lack of correlation with mOS indicates minimal impact on outcomes. These findings suggest reducing selectivity in trial criteria may improve generalizability and applicability without compromising safety or efficacy.

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Artery of Percheron Infarction following endoscopic transsphenoidal surgery: a case series and literature review

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doi: 10.1017/cjn.2025.10291

Background: Artery of Percheron (AOP) infarct is a rare but devastating complication following endoscopic transnasal transsphenoidal surgery (ETTS) for pituitary adenoma resection, characterized by decreased level of consciousness, mydriasis, and cognitive impairment. We reported two new and one remote case in a single institution. Methods: A retrospective case analysis and literature review was conducted. All patients had MRI-confirmed bilateral paramedian thalamic and/or midbrain infarcts following primary or redo ETTS for pituitary adenomas. Results: 8 total cases were identified, with a mean age of 45.8 years (SD: 6.06), including 6 females (75%) and 2 males (25%), undergoing initial (6/8, 75%) or repeat (2/8, 25%) ETTS for pituitary macroadenomas. Tumour consistency was solid in 6/8 (75%), hemorrhagic in 1/8 (12.5%) and cystic in 1/8 (12.5%). MRI showed bilateral paramedian thalamic infarcts (8/8 100%), with midbrain extension in 5/8 (62.5%). Intraoperative CSF leaks occurred in 6 of 8 (75%). The mean Glasgow Outcome Scale (GOS) score was 3 (range 2-4, SD: 0.37) at a mean follow-up of 8.6 (SD: 5.5) months. Conclusions: AOP infarcts are rare following ETTS for pituitary adenomas. Possible associations include large tumour size, firm consistency, and intraoperative CSF leak. Clinical outcomes are typically poor and characterized by severe long-term disability.

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The role of 5-ALA Fluorescence-guided surgery in non-glioma pathologies

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doi: 10.1017/cjn.2025.10292

Background: Fluorescence-guided surgery (FGS) with 5-aminolevulinic acid (5-ALA) is a well-established tool for improving tumor visualization in glioma surgery. However, its applications in non-glioma pathologies remain underexplored and require further investigation. Methods: A retrospective review of patients who underwent FGS with 5-ALA between January 2022 and September 2024 was conducted to assess its utility in non-glioma tumors. Results: Among 232 FGS procedures, 13 (5.6%) involved non-glioma pathologies. We categorized our patients into three different levels: high, moderate, and no response based on intra-operative 5-ALA fluorescence visualization. Our patients showed a high 5-ALA fluorescence in 10 cases (77%), mainly in the following tumors: choroid plexus papilloma, atypical teratoid rhabdoid tumor, metastatic adenocarcinoma as well as atypical meningiomas. Moderate 5-ALA fluorescence was seen in 2 cases (15%). While no 5-ALA fluorescence was seen in one case of CNS lymphoma. 90% of procedures with high response had total resection. Conclusions: Fluorescence-guided surgery (FGS) using 5-ALA has demonstrated effectiveness in enhancing tumor visualization beyond gliomas. This retrospective review highlights the potential applications of 5-ALA in various non-glioma pathologies. These findings emphasize the need for further research to refine the use of 5-ALA FGS in diverse pathologies, optimize patient selection, and expand its utility in neurosurgical oncology.

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Factors affecting local control of resected brain metastases after single-fraction stereotactic radiosurgery: a systematic scoping review

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doi: 10.1017/cjn.2025.10293

Background: This scoping review investigates factors influencing local control in patients with metastatic brain disease undergoing adjuvant stereotactic radiosurgery (SRS) to surgical cavities. Methods: Seven databases (Ovid Medline, PubMed, Web of Science, EMBASE, BIOSIS, Scopus, Global Health, Cochrane) were searched up to August 2, 2021, using terms related to radiosurgery and brain metastasis. A three-level

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