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# Supramaximal resection: retrospective study on IDH-wildtype Glioblastomas based on the new RANO-Resect classification

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## Abstract

**Background:** The prognostic value of the extent of resection in the management of Glioblastoma is a long-debated topic, recently widened by the 2022 RANO-Resect Classification, which advocates for the resection of the non-enhancing disease surrounding the main core of tumors (supramaximal resection, SUPR) to achieve additional survival benefits. We conducted a retrospective analysis to corroborate the role of SUPR by the RANO-Resect Classification in a single center, homogenous cohort of patients.

**Methods:** Records of patients operated for WHO-2021 Glioblastomas at our institution between 2007 and 2018 were retrospectively reviewed; volumetric data of resected lesions were computed and classified by RANO-Resect criteria. Survival and correlation analyses were conducted excluding patients below near-total resection.

**Results:** 117 patients met the inclusion criteria, encompassing 45 near-total resections (NTR), 31 complete resections (CR), and 41 SUPR. Median progression-free and overall survival were 11 and 15 months for NTR, 13 and 17 months for CR, 20 and 24 months for SUPR, respectively ( $p < 0.001$ ), with inverse correlation observed between survival and FLAIR residual volume ( $r -0.28$ ). SUPR was not significantly associated with larger preoperative volumes or higher rates of postoperative deficits, although it was less associated with preoperative neurological deficits (OR 3.37,  $p = 0.003$ ). The impact of SUPR on OS varied between MGMT unmethylated (HR 0.606,  $p = 0.044$ ) and methylated (HR 0.273,  $p = 0.002$ ) patient groups.

**Conclusions:** Results of the present study support the validity of supramaximal resection by the new RANO-Resect classification, also highlighting a possible surgical difference between tumors with methylated and unmethylated MGMT promoter.

**Keywords:** Extent of Resection; Glioblastoma; RANO-Resect; Survival.

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