

## ABSTRACT

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The effectiveness of gamma knife radiosurgery for the management of residual high-grade gliomas: A single institutional study.

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High-grade gliomas (HGGs) are presently managed via surgical resection, external beam radiation therapy (EBRT), and chemotherapy. Although Gamma Knife radiosurgery (GKRS) is currently used to manage HGGs, it has not been considered standard care. This paper aims to compare the contribution of GKRS to clinical outcomes in patients in which gross total resection (GTR) cannot be achieved. We retrospectively reviewed the data of 99 patients with HGG (World Health Organization (WHO) grade III and IV) from two groups: group 1 consisted of 68 patients for which only EBRT was administered, and group 2 consisted of 31 patients for which EBRT and GKRS were administered. Patient demographic data, the extent of resection, IDH mutation, radiation dosage, progression-free survival (PFS), overall survival (OS), and follow-up time were recorded and compared across groups. The grade III/IV tumor ratio was 10/58 and 10/21 in groups 1 and 2, respectively. In group 2, PFS and OS were higher than in group 1 ( $P = 0.030$  and  $0.021$ ). The mean follow-up time was  $15.02 \pm 11.8$  (3-52) and  $18.9 \pm 98.6$  (7-43) months in groups 1 and 2, respectively. In addition to the standard management of HGGs in patients without GTR, boost GKRS during the early postoperative period is beneficial for increasing PFS and OS.

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