## GAMMA KNIFE STEREOTACTIC RADIOSURGERY FOLLOWED BY BEVACIZUMAB FOR RECURRENT GLIOBLASTOMA

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**INTRODUCTION:** Stereotactic radiosurgery (SRS) represents a salvage therapeutic modality for recurrent Glioblastomas. Although there is no clear benefit in overall survival, recent publications suggest that the concomitant use of bevacizumab may reduce pos-irradiation complications.

**OBJECTIVES:** Evaluate the clinical characteristics and patterns of the findings in magnetic resonance imaging (MRI) in a series of patients with focal glioblastoma recurrence treated with Gamma Knife SRS plus bevacizumab.

**METHODS:** Post-treatment MRI of five patients from our series were analyzed. Findings were divided in progression and nonprogression and categorized according to the patterns found. Additional outcomes were overall survival (OR) and progression free survival (PFS).

**RESULTS:** Standard and advanced MRI was performed in all cases. Standard imaging showed similar findings in recurrence disease and post-therapeutic changes, with heterogenous contrast enhancement and vasogenic edema. Advanced imaging was more accurate, with recurrence showing restricted diffusion of the enhancing lesion with high perfusion (rCBV and Ktrans) and elevated choline/NAA ratios.

**CONCLUSION:** Post-therapeutic neuroimaging is challenging and time-consuming in high grade gliomas, but advanced techniques may be helpful in differentiating residual/recurrence neoplasm form post-chemoradiotheraphy findings.



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Contrast-enhanced MRI shows stable hemorragic surgical cavity in the right thalamus (short arrow). A small enhancing nodule is slowing enlarging in the medial portion extending to the lateral ventricle (long arrow). Dynamic susceptibility contrast MR perfusion show high relative blood volume within the enhancing nodule, suggesting viable tumor. Also note low perfusion in the surgical cavity.

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Contrast-enhanced MRI shows enlarging expansive lesion in the copus callosum with peripheral enhancement Progressive DWI hypersignal, suggesting coagulative necrosis. These findings have been associated with better prognosis. Recently new studies suggest hidden tumor within necrosis.