Surgery for recurrent high grade glioma after treatment with bevacizumab.

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BACKGROUND: Bevacizumab (BVZ) is an FDA-approved anti-angiogenic agent used for treatment of recurrent glioblastoma. Complications related to impaired healing may adversely affect patients resected for recurrent high-grade glioma (HGG) following treatment with BVZ.

OBJECTIVE: To examine the complication rate, outcome, and tumor vasculature in patients resected for recurrent HGG following treatment with BVZ.

METHODS: Data were reviewed retrospectively from patients undergoing surgery for recurrent HGG following treatment with BVZ. Results were compared to a control group of recurrently operated BVZ-naïve HGG. Tumor samples and MRI were analyzed.

RESULTS: Fifteen patients underwent HGG resection following progression after bevacizumab. Forty-four BVZ-naïve patients who underwent surgeries for tumor recurrence were included as controls. Median time from BVZ treatment to surgery was 30 days (2-107). Median overall survival from time of tumor diagnosis was 21.0 months (12-83.0) and median survival from post-BVZ surgery was 5.0 months (2.0-19.0), compared to 8.1 months in BVZ-naïve controls measured from time of their last re-operation. Five of the 15 patients survived 6 or more months after post-BVZ surgery. Nine patients developed post-surgical complications requiring intervention. Complication rates for surgery after BVZ treatment were 66.7% as compared to 38.6 % in the control group (p=0.077). We did not see overt changes in histopathology or immunohistochemistry staining; however, tumor vasculature in tumors resected after treatment with BVZ showed significant decrease in mean vessel density.

CONCLUSION: Surgery for recurrent HGG may be feasible in a select group of patients. Mean tumor vessel density may be decreased following treatment with BVZ.

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KEYWORDS: bevacizumab; mean vessel density; postoperative complication; recurrent high grade glioma; surgical resection

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