The impact of surgery on survival after progression of glioblastoma: A retrospective cohort analysis of a contemporary patient population.

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Despite updated management of glioblastoma (GB), progression is virtually inevitable. Previous data suggest a survival benefit from resection at progression; however, relatively few studies have evaluated the role of surgery in the context of contemporary GB treatment and widespread use of bevacizumab and chemotherapy. As such, the purpose of this study is to evaluate outcomes following surgical resection in patients with progressive GB since 2008. The records of all patients who underwent biopsy or resection of GB between January 1, 2008, and December 31, 2015, were retrospectively reviewed to identify 368 patients with progressive GB. Median survival and 95% confidence intervals were generated with the Kaplan-Meier method. Multivariate analysis, which controlled for age, Karnofsky Performance Status (KPS), extent of resection, adjuvant chemotherapy and radiation, tumor location, and tumor multifocality, of post-progression survival was carried out using a Cox proportional hazards model. Of 368 patients with progressive disease, 77 (20.9%) underwent resection at first documented progression. The median post-progression survivals for patients who did and did not undergo resection at this time were 12.8 and 7.0 months, respectively. In multivariate analysis, KPS ≥ 70 at progression (HR 0.438), receipt of bevacizumab at first progression (HR 0.756), and receipt of chemotherapy at first progression (HR 0.644) were associated with increased post-progression survival. Thus, surgery for progressive GB may not improve post-progression survival in the context of contemporary maximal non-surgical therapy. Further investigation is necessary to elucidate what role, if any, bevacizumab has in prolonging post-progression survival in patients with progressive GB.