

ABSTRACT

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Predictors of surgical site infection in glioblastoma patients undergoing craniotomy for tumor resection.

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OBJECTIVE: Surgical site infections (SSIs) burden patients and healthcare systems, often requiring additional intervention. The objective of this study was to identify the relationship between preoperative predictors inclusive of scalp incision type and postoperative SSI following glioblastoma resection.

METHODS: The authors retrospectively reviewed cases of glioblastoma resection performed at their institution from December 2006 to December 2019 and noted preoperative demographic and clinical presentations, excluding patients missing these data. Preoperative nutritional indices were available for a subset of cases. Scalp incisions were categorized as linear/curvilinear, reverse question mark, trapdoor, or frontotemporal. Patients were dichotomized by SSI incidence. Multivariable logistic regression was used to determine predictors of SSI.

RESULTS: A total of 911 cases of glioblastoma resection were identified, 30 (3.3%) of which demonstrated postoperative SSI. There were no significant differences in preoperative malnutrition or number of surgeries between SSI and non-SSI cases. The SSI cases had a significantly lower preoperative Karnofsky Performance Status (KPS) than the non-SSI cases (63.0 vs 75.1, $p < 0.0001$), were more likely to have prior radiation history (43.3% vs 26.4%, $p = 0.042$), and were more likely to have received steroids both preoperatively and postoperatively (83.3% vs 54.5%, $p = 0.002$). Linear/curvilinear incisions were more common in non-SSI than in SSI cases (56.9% vs 30.0%, $p = 0.004$). Trapdoor scalp incisions were more frequent in SSI than non-SSI cases (43.3% vs 24.2%, $p = 0.012$). On multivariable analysis, a lower preoperative KPS (OR 1.04, 95% CI 1.02-1.06), a trapdoor scalp incision (OR 3.34, 95% CI 1.37-8.49), and combined preoperative and postoperative steroid administration (OR 3.52, 95% CI 1.41-10.7) were independently associated with an elevated risk of postoperative SSI.

CONCLUSIONS: The study findings indicated that SSI risk following craniotomy for glioblastoma resection may be elevated in patients with a low preoperative KPS, a trapdoor scalp incision during surgery, and steroid treatment both preoperatively and postoperatively. These data may help guide future operative decision-making for these patients.

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