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# Congenital Brain Tumors: Surgical Outcomes and Long-Term Prognostic Factors

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## Abstract

**Objective:** To evaluate long-term outcomes of surgical resection for congenital brain tumors (CBTs) in infants under one year of age and to identify factors related to survival.

**Methods:** Our retrospective study analyzed infants who underwent gross total (GTR) or subtotal resection (STR) for CBTs between 2001 and 2019. Data were obtained from medical records, including demographics, clinical presentation, diagnosis, tumor characteristics, and presence of hydrocephalus. Additional factors such as pre- and/or postoperative ventriculoperitoneal shunt (VPS) placement and adjuvant chemotherapy or radiotherapy were also reviewed. Cox regression analysis was used to identify factors associated with survival.

**Results:** The study included 70 patients, with median age at surgery of 198.5 days, and 28 (40%) were girls. Seizures (31.4%) and vomiting (24.3%) were the most common presenting symptoms. High-grade tumors were present in 29 (41.4%) patients. GTR was achieved in 64.3% of cases, with surgical mortality rate of 7.1%. Overall survival rates at 5 and 10 years were 78% and 63%, respectively. Long-term follow-up data were available for 61 patients (87%), with median follow-up of 74.2 months. Among 45 long-term survivors, 55.5% had neurological sequelae. Factors associated with reduced survival included high-grade, preoperative hydrocephalus, larger tumor size, and VPS placement. The extent of resection improved survival only in low-grade tumor cases. Multivariable Cox regression analysis identified tumor grade and size as independent predictors of poor prognosis.

**Conclusions:** Surgical resection remains crucial for treating CBTs in infants under one year, yet the aggressive nature of malignant tumors results in suboptimal outcomes regarding prognosis.

**Keywords:** brain tumor; congenital; infant; outcome; surgery; total resection.

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