

## ABSTRACT

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Association between surgical volume and outcomes after craniotomy for brain tumor removal: A South Korean nationwide cohort study.

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We aimed to examine the effect of surgical volume on the 1-year mortality of patients who underwent craniotomy for brain tumor removal. In this nationwide population-based cohort study, data were extracted from the South Korean National Inpatient Database. The study included patients diagnosed with brain tumors who underwent craniotomy for brain tumor removal between January 1, 2010 and December 31, 2018. Multivariable Cox regression models were used to evaluate the associations between surgical volume and outcomes. A total of 9,849 patients were included in the analysis, of whom 957 (9.7%) were aged  $\leq 18$  years. One-year all-cause mortality occurred in 2,779 (28.2%) patients. The multivariable Cox regression model showed that an increase in case volume by 10 was associated with decreased 1-year all-cause mortality (hazard ratio [HR]: 0.98, 95% confidence interval [CI]: 0.97-0.99;  $P = 0.002$ ), 1-year brain-cancer mortality (HR: 0.99, 95% CI: 0.98-0.99;  $P = 0.044$ ), and 1-year other (non-brain cancer) mortality (HR: 0.95, 95% CI: 0.92-0.98;  $P = 0.001$ ). Similar trends were observed in the subgroup analyses for both adult and pediatric patients. High surgical volumes were associated with decreased 1-year all-cause mortality after craniotomy for brain tumor removal. However, since the type and stage of the brain tumor and neurosurgeon-related factors were not considered, further study is needed to confirm our findings.

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