Factors Influencing the Outcome of Decompressive Craniectomy Used in the Treatment of Severe Traumatic Brain Injury

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Abstract

Objective: To evaluate risk factors that influences the outcome of decompressive craniectomy (DC) in severe traumatic brain injury patients.

Material and Method: The authors' retrospective review of data collected from 826 severe traumatic brain injury patients admitted to the Chiang Mai University Hospital between January 1, 2006 and December 31, 2008. During this period, 159 of 826 patients (19.25%) underwent DC and the craniectomy size was not smaller than a fronto-temporo-parietal or a bifrontal bone flap. Data collected included demographics, pre- and post-operative Glasgow coma scores (GCS), timing of surgery, complications, and Glasgow outcome score (GOS) at discharge and six months after surgery. At our institution, patients are managed using the Brain Trauma Foundation guidelines.

Results: One hundred fifty nine patients were identified, 130 (81.76%) male and 29 (18.23%) female. One hundred twenty two patients were operated within the first 24 hours after admission. Overall mortality rate was 44.65%. The survival group was younger (30.73 years vs. 43.46 years, p<0.001) and had a higher pre-craniectomy GCS (6 vs. 5, p = 0.002). Of the 88 survivors, favorable outcome was achieved in 21 patients (13.20%) at discharge and increased to 38 patients (23.89%) at six months after surgery. Those with favorable outcome were younger (25.43 years vs. 38.35 years, p = 0.001) and had a higher pre-craniectomy GCS (p = 0.013).

Conclusion: Younger age group patients and higher pre-operative GCS are two factors that influence the outcome of DC. Early decompressive craniectomy in patients with higher GCS may result in better functional outcomes.

Keywords: Decompressive craniectomy, Severe traumatic brain injury, Factors influencing the outcome

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