

Proper Cerebral Perfusion Pressure of the Decompressive Craniectomized Patients with Traumatic Brain Injury

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Introduction

In the severe traumatic brain injured patient, decompressive craniectomy (DC) is an effective treatment option to decrease the increased intracranial pressure (ICP), however maintaining the cerebral perfusion pressure (CPP) at greater than 70 mmHg is the recommendation to improve clinical outcome. In patients who underwent DC surgery, ICP is typically lowered. These authors tried to determine whether the targeted CPP can also be lowered in patients with decompressive craniectomy (DC).

Methods

This study included 199 patients who underwent DC for severe traumatic brain injury. All patients were monitored for ventricular ICP and blood pressure during and after the DC surgery. Cerebral perfusion pressure was calculated from the mean arterial blood pressure (mABP) minus ventricular ICP every two hours, for 3 days postoperative. Patient outcomes were evaluated with the GOS 6 months after surgery, neurologic outcome was analyzed compared to the initial ICP, ventricular ICP and CPP.

Results

The mean age was 49.1 years (median: 50 years) and male to female ratio was 157 to 42. Clinical outcomes positively correlated with CPP ($p=0.000$) and mABP ($p=0.000$); and inversely correlated with initial ICP ($p=0.003$) and postoperative ICP ($p=0.000$). The mortality rate was significantly increased with CPP values between 50 and 60 mmHg ($p=0.048$) compared to standard targeted CPP values of 70 mmHg.

Conclusions

From our cohort of TBI patients who underwent DC surgery, those with CPP values above 60 mmHg, had clinical outcome scores similar with the patients whose CPP was maintained over 70 mmHg. The authors suggest that a targeted CPP might be lowered to around 60 mmHg, in DC patients with traumatic brain injury.

Learning Objectives

Proper CPP in decompressive craniectomized patients.

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