

Decompressive craniectomy as a second/third tier intervention in traumatic brain injury: a multicentre observational study

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RESCUEicp offered decompressive craniectomy (DC) in severe traumatic brain injury (TBI) as third tier option in a randomized controlled setting and demonstrated a decrease in mortality with similar rates of favourable outcome in the DC group with respect to the medical management group. In many centres, DC is being used in combination with other second/third tier therapies. The aim of the present study is to investigate outcomes from DC in a prospective non-RCT context.

Prospectively collected data were obtained from the University Hospitals Leuven (2008-2016) and from the BrainIT study, a European multicentre database (2003-2005). Thirty-seven patients had refractory elevated intracranial pressure and underwent DC as a second/third tier intervention. Age, hypotension, hypoxia, Glasgow Motor Score, pupillary abnormality, CT Marshall classification, extracranial injury, and thiopental administration were analysed, as well as Extended Glasgow Outcome score (GOSE) at 6 months.

GOSE distribution was: death 24.3%; vegetative 2.7%; lower severe disability 10.8%; upper severe disability 13.5%; lower moderate disability 5.4%; upper moderate disability 2.7%, lower good recovery 35.1%; and upper good recovery 5.4%. Outcome was unfavourable in 51.3% and favourable in 48.7%, as opposed to 72.7% and 27.3% respectively in RESCUEicp ($p=0.02$). In the current study patients were older than in RESCUEicp (mean 40.5 vs 32.3; $p=0.0003$), had higher GMS ($p=0.0002$) and 37.8% received thiopental (vs 9.4%; $p<0.00001$). Other variables were not different.

Outcomes of DC patients in the Leuven+BrainIT database were better than in the RESCUEicp surgical patients. Mortality was similar, but there were less vegetative and severely disabled patients and more in the good recovery group. Although patients were older, injury severity was lower. A potential explanation may also be that in daily practice DC is being used in combination with other second/third tier therapies. DC has a place in the management of severe TBI.