

Outcomes after decompressive craniectomy in pediatric patients

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Intro/Background: Decompressive craniectomies are procedures frequently performed in the pediatric population for accidental trauma, non-accidental trauma, brain abscesses, strokes, and other deadly causes of intracranial hypertension. The objective of this study is to determine if there is any difference in morbidity or mortality between the various indications for decompressive craniectomy in pediatric patients, as well as describe our sub-population of TBI patients with a larger sample size than previously explored.

Hypothesis: Our hypothesis is that patients who undergo the operation for accidental trauma and infection will have better outcomes than those whose etiologies had a stroke component: non-accidental trauma, strokes, and ruptured vascular malformations.

Methods: This was a retrospective records review, utilizing a convenience sample from Akron Childrens Hospital. The following variables were collected and analyzed: patient demographics, indication for craniectomy, pre/post-operative Glasgow Coma Scale (GCS) and intracranial pressure (ICP), pre-op pupil exam, injury severity score, CT findings, mortality rate/cause of death and Glasgow Outcome Score (GOS) at last follow-up exam.

Results: This study included 135 patients of which 52 underwent a craniectomy, with the remainder undergoing a craniotomy. Patients who had a stroke component were 4.23 times more likely to die following the craniectomy ($p=0.036$) and were 21 times more likely to have unfavorable Glasgow Outcome Scores (GOS) after the surgery ($p<0.0001$). The median GOS was 3, indicating severe disability, for stroke-like patients at their most recent follow-up and a 5, low disability, for non-stroke-like patients.

Conclusion: This study found that patients who presented with a stroke-like component were more likely to have unfavorable GOS or die after the surgery. The secondary complications from a stroke leave these patients vulnerable to poorer outcomes following surgery. Future studies should investigate how early interventions in these patients can improve outcomes, decrease mortality and impact discussions with families regarding prognosis.