

Introduction

Loss of tamponade maintained by the bone flap is thought to promote expansion of contusions and development of new hematomas after decompressive craniectomy (DC). The clinical implications of this phenomenon have not been studied extensively. We performed a study to assess the rate of hemorrhagic complications after DC and their effect on the functional outcomes of patients.

Methods

We did a retrospective chart review of all patients older than 18 years who presented at a tertiary care hospital Emergency Department over two years, with isolated TBI and underwent either unilateral or bilateral DC. We reviewed the charts for patient demographics, Glasgow Coma Scale on presentation, Revised Trauma Score, pre-operative and post-operative CT scans and Glasgow Outcome Score at last visit. Pre and post-operative CT scans of the brain were compared for the increase in the number/size of contusions or development of new hematomas on the ipsilateral or contralateral side of the craniectomy. The data was analyzed using SPSS.

Learning Objectives

Existing contusions may expand or a new hematoma can form after DC. These findings should be looked for on post-operative CT scans.

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Results

Seventy four patients with TBI were included in the study. After evaluation, 21.6% underwent bi-frontal DC, 41.9% underwent unilateral DC and 36.5% patients underwent DC and clot evacuation. 58.1% patients had no aggravation of the pre-operative finding, while 41.9% showed expansion of the contusion/new hemorrhages. Among the new findings, 13 patients showed emerging contusions that were not present pre-operative. Three patients developed an extradural hematoma, one patient an intra-ventricular hemorrhage and one patient developed an acute subdural hemorrhage. Unfavorable outcomes in patients with hematoma expansion were significantly high.

Conclusions

The overall frequency of expansion of existing hematomas or development of new hematomas is 24.32%. The most common phenomenon is the expansion existing / development of new contusions. Hematoma expansion or new hematomas are associated with worse outcomes.