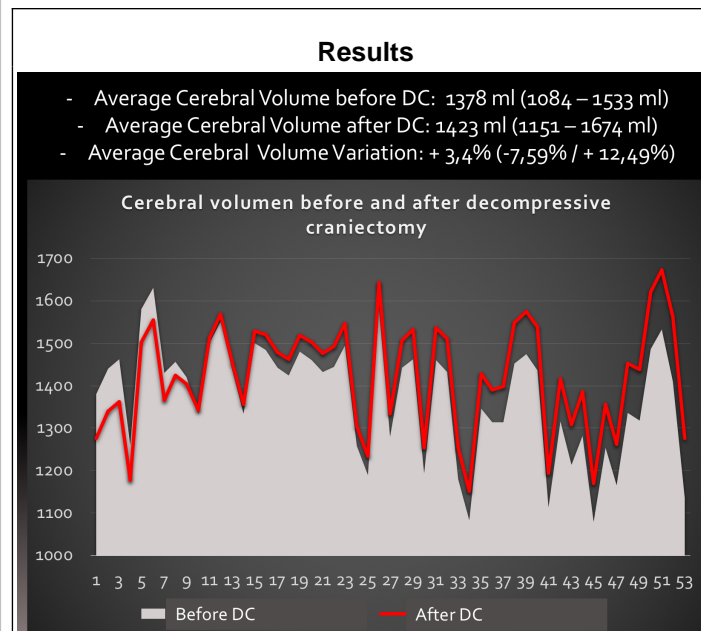


Introduction

Decompressive craniectomy (DC) is one of the most common neurosurgical procedures in severe traumatic brain injury patients. We present a descriptive study about the functional outcome and brain volume changes after DC, using volumetric segmentation of CT Scans.

Methods

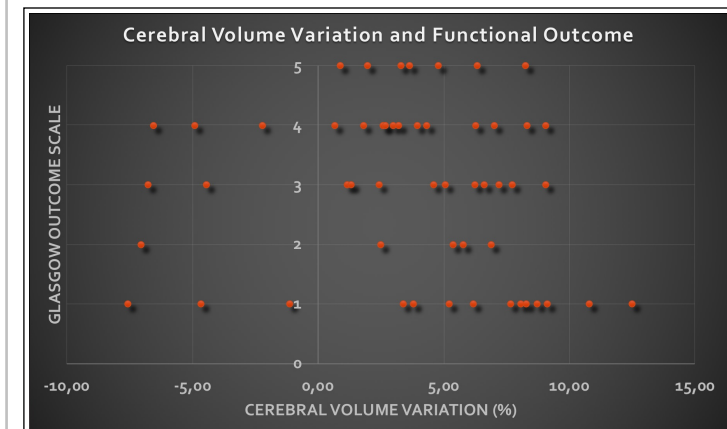
We retrospectively reviewed the clinical course and CT scans of patients who underwent DC between June 1, 2013 and May 1, 2017. Using preoperative and postoperative CT scans, brain volume was measured using volumetric segmentation (Osirix™ Software, Pixmeo SARL, Switzerland) in order to calculate volume variation after the surgical procedure.



Functional Outcome at discharge was assessed using the Glasgow Outcome Scale (GOS).

Results

55 patients were included. Primary and Secondary DC was performed in 57% and 43% of the patients, respectively. We observed an increase in the brain volume in 80% of the patients, with an average of 71 ml or 5,39%, with larger volume increased in patients with secondary DC. GOS was favorable (GOS 4-5) in 23 patients, and unfavorable (GOS 1-3) in 32 patients.



A better functional outcome in patients with an increment of 0-5% (GOS 4-5: 65%, GOS 2-3: 25% GOS 1:10%) was found compared to patients with a variation of 5-10% (GOS 4-5: 30%, GOS 2-3: 40% GOS 1:30%). In patients where the cerebral volume was increased more than 9,06%, mortality was 100%.

Conclusions

Within our series, a larger increment in brain volume after DC was associated with worst functional outcome.

Key Words: Cerebral Volume, Decompressive Craniectomy, Severe Traumatic Brain Injury.