# Craniectomy Alters Biophysical Properties of CSF, Which Might Underlie the Pathophysiology of Syndrome of the Trephined

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## Introduction

Syndrome of the Trephined (ST) is a post-craniectomy complication. It is characterized by the development of new neurological symptoms following the craniectomy that disappear after cranioplasty. The purpose of our work was: i) to identify imaging biomarkers of ST, and ii) to identify pathophysiological changes that occur after craniectomy.

## Methods

We have retrospectively analyzed CT images of 32 patients that underwent craniectomy (ST=13, controls=19). The relative intracranial cerebrospinal fluid (CSF) volume was quantitatively measured using ITK snap software. Nine patients (ST=3, controls=6) had longitudinal CT scans. Patients with new intracranial hemorrhage, ischemia or hydrocephalus (treated by ventriculo-peritoneal shunt) were excluded of this study.

## Conclusions

Our preliminary results suggest that craniectomy alters biophysical properties of CSF that might underlie pathophysiology of ST.

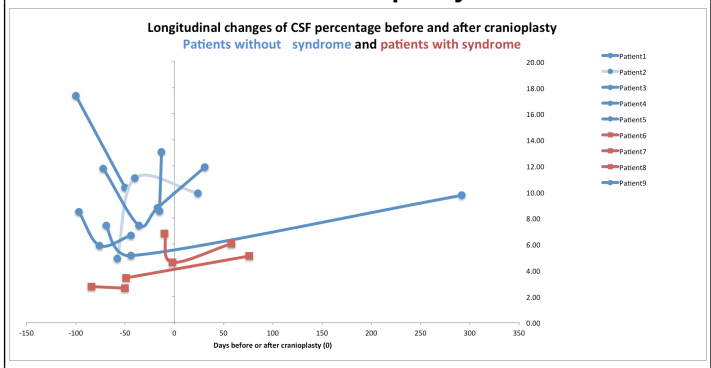
## Learning Objectives

Imaging biomarker of syndrome of the trephined
Altered biophysical properties of CSF after craniectomy
Altered biophysical properties of CSF after cranioplasty

## Results

We did not find significant differences between groups in the mean age or number of post-craniectomy days. ST was diagnosed during the 2nd post-craniectomy month. ST patients had significantly smaller relative intracranial CSF volume. Preliminary analysis of longitudinal data (ST and controls) showed that CSF volume declines with time following the craniectomy, and increases after cranioplasty (Figure 1).

**Longitudinal changes if CSF percentage before and after cranioplasty**




This graph show the longitudinal change of the volume of the CSF before and after cranioplasty

## References

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