

# Syndrome of the trephined clinical features

## Etiology

A possible explanation for symptoms related to the bone defect:

1. atmospheric pressure exerted directly on the surface of the brain including compression of cortical veins

- changes in cerebral blood flow (CBF)
- impaired cerebral glucose metabolism
- local alteration in CSF flow

2. globally altered CSF flow dynamics

3. scar tissue adhering to the dura and/or brain

4. acute angulation of scalp at bone edges stimulating pain fibers causing local pain

5. pulsations (CSF and/or blood) causing irritation of (pain sensitive) dura

The effects of barometric pressure are modified by:

1. scalp elasticity

2. size of the bone defect

3. amount of skull curvature at defect site

4. changes in CSF pressure with: postural changes (incorrectly referred to as “siphoning,” in reality is a reduction in pressure of a fluid column (hydrostatics)), coughing/straining, hydrocephalus

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It is a rare, important complication characterized by neurological dysfunction that improves with [cranioplasty](#). Its varied symptoms include motor, cognitive, and language deficits. Its exact characterization appears suboptimal, with differing approaches of evaluation.

Skull defect can result in various symptoms of the “syndrome of the trephined” like headache, dizziness, undue fatigability, vague discomfort at the site of defect, feeling of apprehension and insecurity, mental depression and intolerance to vibration as described by Grant and Norcross <sup>1)</sup>.

Also severe [dysautonomia](#) and worsening the patient condition is described <sup>2)</sup>.

In a systematic review, symptoms most commonly include motor, cognitive, and language deficits (57%, 41%, 28%, respectively), with improvement after cranioplasty within  $3.8 \pm 3.9$  days. <sup>3)</sup>.

<sup>1)</sup>

Grant FC, Norcross NC. Repair of cranial defect by cranioplasty. Ann Surg 1939;110:488-512.

2)

Romero FR, Zanini MA, Ducati LG, Gabarra RC. Sinking skin flap syndrome with delayed dysautonomic syndrome-An atypical presentation. Int J Surg Case Rep. 2013;4(11):1007-9. doi: 10.1016/j.ijscr.2013.08.013. Epub 2013 Sep 8. PubMed PMID: 24083997; PubMed Central PMCID: PMC3825975.

3)

Ashayeri K, M Jackson E, Huang J, Brem H, R Gordon C. Syndrome of the Trephined: A Systematic Review. Neurosurgery. 2016 Oct;79(4):525-34. doi: 10.1227/NEU.0000000000001366. PubMed PMID: 27489166.

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