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**Title:** MONITORING OF ABSOLUTE CEREBRAL OXYGEN SATURATION (FORE-SIGHT TECHNOLOGY) DURING CRANIOTOMY FOR ACUTE INTRACEREBRAL BLEEDING

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**Background and Goal of Study: (required):** Cerebral oximetry, based on NIRS, measures regional cerebral tissue oxygen saturation (SctO<sub>2</sub>) non-invasively at the microvascular level. The FORE-SIGHT absolute cerebral oximeter, a recently introduced monitoring device, uses 4 precise wavelengths to determine absolute SctO<sub>2</sub>. In the present study, we wanted to report on the changes in absolute SctO<sub>2</sub> occurring during craniotomy for acute intracerebral hematoma.

**Materials and Methods: (required):** Thirteen pts suffering from acute intracerebral bleeding necessitating urgent craniotomy were included. All pts presented with reduced consciousness (GCS <8) and with signs of increased intracranial pressure (CT imaging). Pts received systemic stabilization (intubation, ventilation, hemodynamic support) and were transferred as soon as possible from the emergency department into the operating theatre (OR). As soon as pt arrived in the OR, bilateral SctO<sub>2</sub> monitoring was started (sensors applied bilaterally over patient's forehead).

**Results and Discussion: (required):** Pts arrived in the OR after a mean of 1.3hrs after hospital admission. Five pts suffered from acute intracerebral bleeding, while 4 pts presented with acute subdural hematoma and 4 pts presented with acute epidural hematoma. In 2 of 13 pts, excessive ambient light interfered with SctO<sub>2</sub> monitoring and no SctO<sub>2</sub> data could be obtained. In the other 11 pts, SctO<sub>2</sub>, ipsilateral to the intracerebral bleeding, was significantly lower than contralateral SctO<sub>2</sub>. In 2 pts, ipsilateral SctO<sub>2</sub> values below 55% were observed. One of these pts suffered from epidural hematoma, the other pt presented with a subdural hematoma. Bone removal resulted in a significant increase in ipsilateral SctO<sub>2</sub> in 2 pts. Opening of the dura resulted in a significant increase in ipsilateral SctO<sub>2</sub> in 7 pts, while in 2 pts (with intracerebral bleeding) a significant increase in ipsilateral SctO<sub>2</sub> occurred after effective removal of the bleeding. In no pts, any significant change in contralateral SctO<sub>2</sub> was observed during the whole procedure. In all pts, ipsilateral SctO<sub>2</sub> increased further during procedure and ipsilateral SctO<sub>2</sub> values were higher than 80% in all pts at postoperative transfer to the ICU department.

**Conclusion(s): (required):** Non-invasive monitoring of absolute cerebral oxygen saturation at the microvascular level might offer new opportunities for the management of pts suffering from acute intracerebral bleeding. Information obtained during urgent craniotomy might guide further neuro-critical care management.