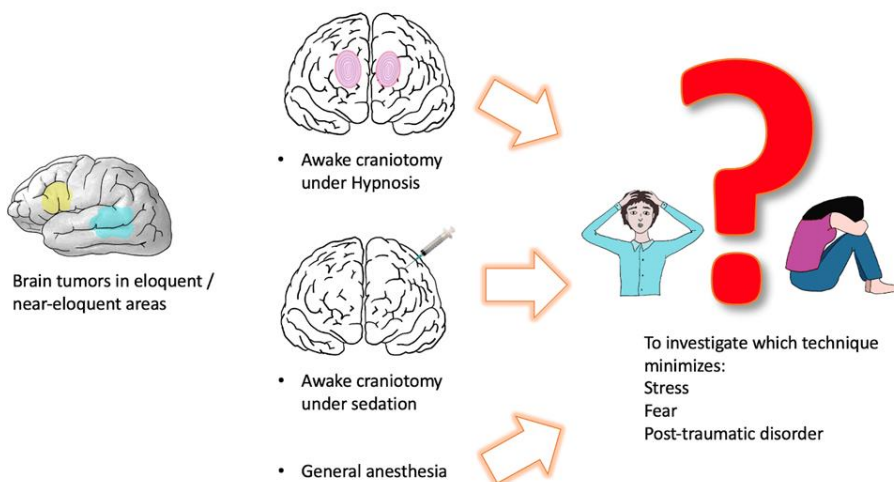


# Hypnosis-aided awake craniotomy versus monitored anesthesia care for brain tumors (HAMAC Study)



The primary objective of brain tumor surgery is to remove the tumor while preserving important brain functions. To achieve this, surgeons need to identify and map functional areas of the brain during the operation. Awake techniques, where patients are conscious during surgery, have greatly advanced our understanding of brain networks and expanded the scope of brain mapping. Intraoperative awake brain mapping is now considered the most effective method to achieve a balance between tumor removal and preserving brain function, especially for tumors located in or near critical areas. In fact, awake brain surgery not only helps identify and preserve brain functions but it has also shown positive effects on patient survival rates.

Traditionally, anesthesia for awake brain surgery involves sedative drugs to keep the patient calm and comfortable. However, this approach has two disadvantages: it often causes significant psychological stress, pain, and discomfort, with many patients experiencing symptoms of post-traumatic stress as a result. Also, sedative drugs might interfere with the testing timing and accuracy. Researchers are studying the impact of anesthesia technique on stress responses during brain surgery, as this is a predictor for global post-surgical recovery. General anesthesia, which involves complete unconsciousness, may reduce stress before and

during the operation, but it has been associated with higher stress hormone levels after surgery. Another alternative is using hypnosis during awake brain surgery, which might reduce psychological stress and improve patient tolerance during the procedure.

The awake brain surgery program at CHUV was established in 2010, and since 2021, hypnosis has been introduced as an anesthesia approach. We have already conducted more than 20 successful surgeries using hypnosis, and our preliminary results are highly encouraging. In this project, we aim to measure and compare the levels of psychological and physiological stress in patients scheduled for surgery to remove brain tumors. Specifically, we aim to formally investigate whether patients undergoing brain surgery with hypnosis experience lower psychological and physiological stress levels compared to those under sedation or general anesthesia. We will prospectively study patients undergoing brain surgery for tumors located in or near critical brain areas at CHUV (Lausanne University Hospital).

Our hypothesis is that hypnosis can reduce the stress response and improve the overall comfort of patients undergoing brain tumor surgery. We will assess the stress levels using various psychological measurements, such as the overall comfort and satisfaction level and dedicated neuropsychological evaluations, along with physiological measurements including the heart rate, blood levels of stress hormones and electroencephalography (brain waves recording) during surgery.

The strategic goal of this project is to determine which anesthesia method provides the highest patient comfort and minimizes the stress response during surgery and we believe that the findings of this study will contribute to improving the perioperative care of patients with brain tumors.