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## ACUPUNCTURE ANESTHESIA ON AWAKE CRANIOTOMY FOR TUMOR REMOVAL: A CASE REPORT

By

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### Abstract

Acupuncture anesthesia is a type of acupuncture-based anesthesia. Anesthesia is achieved by placing needles into certain spots on the body, and the surgery is carried out while the patient is fully aware that he or she is no longer in pain. This approach avoids anesthesia-induced physiological dysfunction and post-operative anesthetic side effects. Acupuncture anesthesia is being used for head, chest, abdominal surgery, and awake craniotomy in persons of all ages. The anesthesiologist's job in awake craniotomy is to deliver appropriate sedation and analgesia in patients who are still conscious and cooperative during the surgery while maintaining breathing and hemodynamic stability. A 42-year-old man was diagnosed with an oligodendroglioma-like supratentorial tumor. He was referred for three weeks of vomiting and headaches. His ECG and thoracic pictures were normal in the lab, but his MSCT revealed a hypodense lesion in the left temporal with modest mass effects. On an awake craniotomy, tumor resection was performed under acupuncture anesthesia. Electroacupuncture induction takes 20 minutes with the use of supplementary medications such as midazolam, fentanyl, and lidocaine. On a compliant and comfortable patient, the surgery can be completed without difficulty. After being examined in the PACU for 30 minutes without discomfort or PONV, he was transferred to the ward. We came to the conclusion that our patient responded well to the acupuncture anesthetic treatment.

**Keywords:** Awake Craniotomy, Acupuncture, Oligodendroglioma.

### INTRODUCTION

Acupuncture anesthesia is a type of anesthesia that is based on acupuncture. Anesthesia is obtained by inserting needles into certain body locations, and surgery is performed while the patient is fully aware that he or she is no longer in pain. This approach avoids anesthesia-induced physiological dysfunction and post-operative anesthetic side effects. For people of all ages, acupuncture anesthesia is now used for head, chest, and abdominal surgery, as well as awake craniotomy.

Awake craniotomy is a treatment utilized in intracranial surgeries for a variety of reasons, including proper localization of anomalies in the brain and reducing the risk of neurological harm. Keeping patients awake

and cooperative during surgery by administering adequate analgesia and sedation while maintaining ventilation and hemodynamic stability is the role of the anesthesiologist. In intracranial tumor excision including the eloquent cortex, awake craniotomy with local anesthetic and supervised sedation has been regarded as an acceptable approach. It enables intraoperative mapping, allowing for radical tumor excision while maintaining functional tissue and reducing morbidity.

### Case Presentation

A 42-year-old male weighing 68 kg was scheduled for a left frontal awake craniotomy for oligodendroglioma excision. After a sudden onset of vomiting and headaches, the patient was diagnosed two months prior, and

the symptoms were more frequent in the last three weeks causing him referred. Laboratory results, ECG, and thoracic images were reviewed and were within normal limits. MSCT showed a hypodense lesion in the left temporal with minimal mass effects. The surgical and anesthetic techniques, as well as any potential consequences, were explained to the patient and his family. After accepting the anesthetic protocol, the informed consent form was signed. Alprazolam 0.5 mg tablet was given as premedication the night before the operation.

The patient had a heart rate of 77 beats per minute and a blood pressure of 120/58 mm Hg before surgery. An 18-g intravenous (IV) catheter was inserted into the right hand. The patient was taken to the surgery room by ambulance (OR). Electrocardiography (ECG), noninvasive blood pressure monitoring, and pulse oximetry were all installed as standard monitors. A basic oxygen face mask with a flow rate of 6 L/min was used. Acupuncture anesthesia was performed by inserting the needles into points of incision, Hegu and Neiguan [7,8]. Electroacupuncture was set at 100 Hertz and 50 VA, whereas stimulation was continued until the end of the operation. The induction of electroacupuncture took 20 minutes. Midazolam 25 mg and Fentanyl 50 µg IV were administered. An indwelling urinary catheter was implanted for patient comfort during the lengthy surgery. Ceftazidime 1 g IV was used as an infection preventative. The neurosurgeon infused 2 percent Lidocaine with epinephrine at the pin sites five minutes before pinning the patient's head using Mayfield tongs. To aid facilitate a patent airway, the patient was positioned with a right tilt and sniff position. A tent was erected beneath the drapes to allow visualization and communication with the patient. Before making the incision, the physician injected 2% Lidocaine with epinephrine into the scalp around the entire surgical site.

Before the incision, the patient's vital signs were 73 beats per minute and 95/57 mm Hg. With a systolic range of 97 to 110 mm Hg and a diastolic range of 53 to 64 mm Hg, and pulse rates of 74 to 85 per minute, blood pressure remained steady after skin incision and during craniectomy. After the patient was woken, an anesthetist performed speech tests. The anesthetist told the patient to squeeze his hand and move his feet on a regular basis. During the waking part, the patient remained attentive and oriented with no speech impediment. The blood pressure was maintained between 99/52 and 111/52 mm Hg, and the pulse rate was between 72 and 80 beats per minute. By the time the head dressing was finished, the patient was awake. The immediate neurologic evaluation was conducted in the operating room and was repeated when the patient arrived in the recovery room. The patient was awake and aware of his surroundings, including people, places, times, and situations, and he could move all of his limbs. The patient was pain-free, and his vital signs were steady, with a blood pressure of 113/57 mm Hg and a heart rate of 82 beats per minute. Oxygen saturations throughout the entire case were 100%. There were no airway obstructions or problems. The patient indicated he remembered some of the intraoperative tests but was unconcerned the rest of the way. The patient's recuperation was uncomplicated following surgery. The patient did not complain of any pain or Post-Operative Nausea Vomiting, and his vital signs were stable (PONV). He was transferred to the ward after being observed at the Post-Anesthesia Care Unit (PACU) for 30 minutes.

## DISCUSSION

The anesthetist faces an open airway and limited access to the patient due to head posture and pinning when performing an awake craniotomy. As a result, it's critical to pick the correct patients for this treatment. Patients must be willing, grasp the procedure

completely, be able to lie still for an extended amount of time, and not have a serious neurologic deficiency. Patients who are obese, have esophageal reflux, sleep apnea, or have constricted airways are not candidates for this type of craniotomy. Last but not least, patients must be enthusiastic about pursuing this strategy. Patients must be sedated or under general anesthesia until the brain is exposed, and then once more when the skull is reopened at the end of the procedure.

Acupuncture can be used as acupuncture anesthesia. Acupuncture as an adjuvant is used in conjunction with continuous general anesthesia or sedation. This approach can prevent anesthesia-induced physiological dysfunction as well as post-operative anesthetic side effects.

Acupuncture analgesia uses segmental and heterosegmental acupuncture to work. In segmental patterns, acupuncture activates A or Group III tiny myelinated primary afferents. Heterosegmental acupuncture is caused by two descending neuronal mechanisms, the first of which is serotonergic and the second of which is adrenergic, as well as a generalized neurohormonal mechanism including the release of free-endorphin and also met-enkephalin.

Pain relief in operations on the skull under acupuncture anesthesia is often better than pain relief in operations on the bodily trunk. However, if the pain is not completely relieved, the patient may become concerned and agitated, which can lead to an increase in intracranial pressure. Then, at the proper dosage, a supplemental drug must be used. Typically, local anesthetics are employed. If meperidine is allowed, the dose should not exceed 1 mg/kg because it can cause respiratory depression.

Acupuncture anesthesia combined with additional medicines such as midazolam, fentanyl, and lidocaine administered before to the incision gave effective anesthetic, drowsiness, comfort, and relaxation in our patient. The approach allowed the tumor boundaries to be removed without causing any

damage or deficits to the patient, who was able to mobilize quickly and was discharged without incident. One of the most difficult tasks to overcome is for an anesthesiologist to maintain intimate psychological touch with the patient during the surgical operation. Although maintaining analgesia and hemodynamic stability with a conscious patient was difficult, the acupuncture anesthesia technique worked well for our patient.

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