

Review Article

AWAKE CRANIOTOMIES

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ABSTRACT:

Awake craniotomy surgery is performed when a tumor lies near or close to functional areas, like motor and speech areas. During surgery cortical stimulation together with brain mapping is executed to clearly define the extent of the tumor boundaries as well as the area through which the lesion can be approached . Throughout this surgery the patient is awake and cooperative. This article gives the advantages of awake craniotomy.

KEY WORDS: Craniotomy, surgery, cortical stimulation, brain mapping, stress, anxiety

INTRODUCTION:

Awake craniotomy is a neurosurgical technique that has evolved and extended thanks to research carried out on this procedure. Studies on the procedure were

carried out in Germany¹, Belgium², Colombia³, India⁴, The United States among other countries confirm that the surgery in awake patients allows not only a safer resection of the lesion but also to broaden the margin of the resection , which results in a better quality of life for some patients .Investigations concluded that the technique is safer due to the fact that it allows to put through the preservation of the motor regions and language areas of the brain . A surgery of this type summons professionals of various disciplines, neuro-audiology, neuropsychology and neuro-anesthesia⁵⁻⁷.

The length of the procedure and the fact of being aware of the surgery are the main obstacles that generate cognitive anxiety in the patient being prepared for an awake craniotomy. Computerized image identification test are carried out in all patients to rule out any alteration in

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this function, at the same time speed in which image designation is performed and recorded. This record will be used as patient's pre-operative baseline later in the surgery to determine if the language areas are being stimulated or not.

Relaxation techniques and developing strategies for coping with such stressful process are crucial to ensuring a cognitively safe surgery for the patient

A simple, clear and effective interview to patient and his family will help build an accurate patient profile. With these elements at hand, it is more viable for surgeons to make a prediction on the patient's performance in surgery.

Making the decision of whether a patient should be awake during surgery or not depends not only on anesthetic and surgical aspects but also on the patient (1) not having visual, hearing or language disruption (2) not having a record of mental illness or psychiatric disorders (3) having relatively moderate anxiety levels which are consistent with the context of the surgery (4) absence of dementia or important cognitive impairment.

There are more variables in the operating room that generate anxiety in the patient such as: low temperatures, odors, and other surgeries taking place in other operating room nearby which the patient might be able to see. As a result it is vital to be subcortical mapping with the

patient at all times talking ,encouraging and assuring him that he will be accompanied at all times and to remind him that his absolute cooperation would be needed. The patient is laid on the operating table in the Operating room , the neurosurgeons begin to draw marks and measurements on the patient's skull, assistants and nurses prepare for surgery, at this point a simple psychological involvement is necessary , encouraging the patient, turning on the radio of the operating room so that the patient listens to music distracting his attention from activities carried out by surgeons and staff , and recording the patient's reactions at all times.

DISCUSSION:

Surgery begins, the music encourages the patient and the conversations to be held with him or her must be well thought out. Closed questions may not be asked as patients tend to answers "yes" or "no" questions accompanied with head movements compromising the surgical areas where neurosurgeons are working also the patient's head is attached to a structure called Mayfield which uses surgical nails that can be moved. Usually patients have an anxiety flare up when they hear the drill and saw, both are used just a few minutes after surgery starts, a thumbs-up for the patient to see can be vital to calm anxiety, and just when the

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drilling and saw sounds end , a tap on the shoulder and a comment of encouragement are also important.

Most patients do not exhibit important anxiety flare ups during motor strip mapping , and when they do it is because an arm or leg has moved without the patient's control and that scares him . It is even possible that his face, mouth and eyes move, but at all times the patient is assured he is doing very well. Once the motor strip mapping has ended, the language mapping begins. A computer is set at a safe distance from the patient's visual field and the patient begins to identify the images he sees while the cortex is stimulated. Some language mistakes begin to emerge during this process in some patients; the most common are anomic aphasia, dysarthria, perseverance and latency in speed to name objects.

During this language stimulation procedure some patients do not report anxiety, while in others stress levels increase when they can only identify the function of the object but not its name. Once the language stimulation ends and the cortex areas are properly marked out with sterile tags , a corticotomy is performed , once again the patient must be kept talking as much time as possible to ensure that the language function is not being harmed , the patient is asked to

move the arm and leg previously stimulated so that mobility is verified in that half of the body Any irregularity in language function must be reported immediately to the neurosurgeon. During the corticotomy the patient talks, sings, listens to songs on the radio and even jokes with neurosurgeons. During the process of closing the incision there can be much pain, especially when working on the dura mater, the patient is less sedated and begins to experience more pain, fatigue and postural stress he is exposed to for hours also start to impact the patient . The psychologist cannot disregard this stage of the process where the patient's despair can be fatal. The patient is therefore motivated, and reminded that the surgery will soon be over.

When the surgery is over the patient is prepared to be transferred to the ICU where he is expected to remain at least forty-eight hours recovering before he is relocated to a ward . A familiar face is the most important thing the patient can encounter after going through such a stressful event as an awake brain surgery. Often after surgery the patient is disoriented, confused, tired, anxious and bored, so a visit from the psychologist and the rest of the surgical team is welcomed by the awoken patient. Attempting to perform an in-depth assessment of the

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patient at that time is considered an immoral sin; a brief assessment with questions that overlap within a conversation would be enough.

A conversation with family members is also a must at this point. It is also the time when the parameters of a concept called Cognitive Rehabilitation begin to be drawn; the patient is provided with memory card games, letter soup worksheets, and simple puzzles to create a culture of cognitive rehabilitation in the patient's family. The patient is given a follow up appointment in the following weeks to begin the cognitive rehabilitation program and undergo a series of tests that are compared with previous tests which even though are not the same, they assess the same areas. Some patients may suffer post-traumatic stress syndrome which may last several weeks, patients are fully entitled to feel frightened, anxious for a few days due to the surgery performed, after all, they underwent an awake craniotomy.

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