



# The Advantages of Perioperative Nursing Assistance for a Patient Subject to Intervention of “Awake Craniotomy”

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## Abstract

The craniotomy is an opening of the skull cap, that is of the bone, until it reaches the brain parenchyma within which trocars, or very small instruments, will be inserted, which, with the aid of the microscope will be useful for removal of the excess tumor mass. In the preoperative period, after having performed a meticulous trichotomy, the area undergoing surgery will be indicated with signs. In order to demonstrate the advantages of perioperative nursing care for the patient undergoing awake craniotomy, it was decided to administer an ad hoc structured questionnaire with targeted questions to the nursing staff of the Local Health Company of Taranto.

The questionnaires administered were 150, a sample of subjects belonging to the surgical branches was chosen. Only 53% of nurses decided to contribute to research, while the remaining 47% decided not. The nurse will recognize himself as a person and not only as a professional, he will rediscover his importance as an educator and above all he will begin to take into consideration those psychological skills that are attributed to him by his professional profile and code of ethics, which for a long time, in the era of digitization and technology, have been pushed aside.

**Keywords:** Awake Craniotomy; Perioperative Nursing; Meticulous trichotomy

## Introduction

The craniotomy is an opening of the skull cap, that is of the bone, until it reaches the brain parenchyma within which trocars, or very small instruments, will be inserted, which, with the aid of the microscope will be useful for removal of the excess tumor mass. In the preoperative period, after having performed a meticulous trichotomy, the area undergoing surgery will be indicated with signs. After carrying out these activities, after dressing the staff, sterile, keeping the patient's head still using the Mayfield headboard, disinfection of the surgical site will follow. Then, the skin and subcutis will be incised using a scalpel, the temporal muscle will be dissected from the bone and once the periosteum is exposed, it will be incised with an electric scalpel and unglued with special tools. Following, holes will be drilled with a drill; these holes will be joined to form a clean cut, with a diamond cutter. Finally, after detaching the underlying meninx, with the use of the craniotomy, to avoid dural injuries, the craniotomy can be defined as completed and the surgeon will be able to access the brain, with the use of microsurgical instruments, thanks to a microscope. Once the surgery is completed, the bone will be repositioned with plates, screws, silk threads or special glues and then proceed to recompose the normal anatomy of the skull. These procedures are performed with the aid of anesthesia. The post anesthetic outcomes force the patient to spend a short period (post-operative) in the intensive care unit, where the medical and nursing staff will constantly monitor the vital parameters of the same, 24 h a day until the clinical conditions will be stable enough to be transferred to the neurosurgical ward for appropriate treatment. This type of intervention implies a continuous situation of alert on the part of nurses above all, who must be able to recognize the signs of an unfortunate outcome and promptly communicate them to the medical staff who will have to intervene. The method called Awake Craniotomy, is considerably advantageous compared to the one previously illustrated, precisely because it indicates a craniotomy operation, like the one previously described, with the particularity of the fact that it will take place with a patient subjected to local anesthesia and therefore awake and collaborating. In the perioperative period, the nursing intervention of a psychological nature is of particular importance for the patient as it supports and prepares him to undergo the intervention, the effective relationship, the proximity makes him

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serene throughout the clinical care path. In conclusion, when the indications allow, the Awake Craniotomy surgery becomes the best choice compared to the classic surgery that takes place under general anesthesia.

In Italy, a pioneer of this surgical technique was the neurosurgeon of Slovenian origins, Miran Skrap, who in his book "Cortical mapping and Craniotomies with awake patient", explained all the various steps the patient, (center of the entire intervention), is subjected and explained very well the role of the various professional figures who alternate, dedicating ample space to the figure of the nurse who also Skrap considers fundamental within the entire process. First of all, it is important to focus on an aspect that may seem marginal, but which in reality is absolutely not, this approach is the pre-operative neuropsychological one. The neurosurgeon highlights the importance of being able to test the patient's cognitive level in advance, which is crucial for achieving the desired post-surgery result and avoiding any kind of deficit, making perioperative nursing more advantageous objectively. The person in question should possess normal cognitive abilities. In addition to this approach, the neurophysiological one, pre and post-intervention, is also fundamental, which will highlight the various brain responses, which follow the induced stimuli. In the preoperative phase, checks will be required including the electroencephalogram, which will provide data on the electrical activity of the brain, and what are called evoked responses, which can be recorded directly from the scalp. Arriving at the intraoperative stage, it is essential to be able to stimulate the cortex directly in order to identify the cortical areas defined as critical. Finally, the anesthetic technique becomes of fundamental importance, indispensable for craniotomy when the patient is awake. In fact, the evening before the operation, the ward nurse will administer a drug to the patient that can guarantee him a continuous rest, such as lorazepam, guaranteeing what is called premedication. On the morning of the operation, however, the ward nurse will make sure that no therapy is administered. Once received in the operating area, in the pre-anesthesia phase, he will be administered proton pump inhibitors. Finally, an hour before the surgery, the antibiotic is administered, which will have its peak phase during the surgery, lowering the infectious risk. Once in the room, we will proceed with sedo-analgesia, which involves the administration of subcutaneous anesthetic such as lidocaine, with the aim of eliminating pain to the patient during the craniotomy and therefore the exposure of the dura mater, once the patient arrives at the parenchyma it will not feel any pain as it is not sensitive to painful stimuli. Subsequently, low doses of propofol and remifentanyl will be administered, in order to partially calm the patient, eliminating responses to painful stimuli, while keeping him conscious, awake and cooperating, the same, will be constantly monitored by the nurses who will converse with him and, if necessary, they will detect and fulfill your needs, supervising the vital parameters in collaboration with the doctor. An hour before the opening of the dura mater, mannitol will be infused at high speed with anti-edema purposes. At the end of the surgery, these drugs will be suspended and the patient will return safely to the ward without hemodynamic monitoring which will not be necessary. In the postoperative phase, the patient will certainly require an individualized assistance plan, but in light of the above, not being complex but compliant, he will not need any particular assistance activities.

### **The Experience at the "Santissima Annunziata" Hospital, Taranto, Italy**

The "Santissima Annunziata" Hospital, Taranto, Italy, has

established itself for having performed the Awake Craniotomy surgery but above all for being the first garrison to have achieved this goal in all of southern Italy. Following screening investigations such as CT and MRI, patients were diagnosed with cerebral neoplasms, in particular glioblastoma localized in the temporal and temporal-parietal area, astrocytoma always localized at the level of the temporal lobe and finally a case of interstitial cortical expansion. The age of the patient's ranges from about forty to seventy years, just over half of the cases concern men. Patients were informed about the possibility of being able to be operated with this technique and therefore, in the light of the information received, they signed the informed consent to be subjected to this alternative, or rather innovative, intervention, which would have guaranteed them a better outcome prognosis with probable harmful postoperative outcomes absolutely reduced; patients, in the preoperative phase, were informed about the statistics related to this intervention, and about the possible negative variables, which could lead to the possibility of failure of the intervention. Regardless of how he arrived in the ward, the patient was welcomed by the nurses who, after having ascertained and assessed the conditions, proceeded to prepare him by listening carefully and reassuring him, answering questions or doubts. The operating room and anesthesia nurses, collaborating with doctors, take care of various activities including finding venous access. In the operating room, all the necessary equipment was used to be able to recreate the patient's anatomy in a realistic version and then used the probe to map the area and obtain the hot spot.

### **The Quantitative Survey: The Questionnaire**

In order to demonstrate the advantages of perioperative nursing care for the patient undergoing awake craniotomy, it was decided to administer an ad hoc structured questionnaire with targeted questions to the nursing staff of the Local Health Company of Taranto.

### **Results**

The questionnaires administered were 150, a sample of subjects belonging to the surgical branches was chosen. Only 53% of nurses decided to contribute to research, while the remaining 47% decided not. 27% of the respondents know this intervention, this data is correlated by adding to the previous one, highlighting that there are really many people who are not informed about new frontiers in the surgical and anesthetic field; the data certainly raises reflections on the important figure and skills of the room and anesthesia nurse. If we dwell on those who instead claimed to know the awake craniotomy, we note that 57% are female, compared to 43% male, which points out that even if to a very small extent, women were more active in research; 28.5% of those who claimed to know the awake craniotomy have worked for over ten years, 33.3% from five to ten years and finally 38.2% have worked for one to five years. This shows how the fact of being recent graduates is very beneficial to research and the desire to improve and get to know new avant-gardes in the various sectors of medicine. Finally, the sample was asked to explain what the intervention consisted of and 100% replied explaining that it is an Awake Craniotomy, without however explaining that in reality there is an anesthetic technique at the base and monitoring by the patient absolutely important and necessary anesthesia nurse. For this reason, professionals should be better informed about all the implications present in the procedure. The last data, the most significant for the purposes of evaluating and achieving our goal, or whether the awake technique or the technique under general anesthesia is "better" according to the nursing staff. The result is that almost all of them

consider this intervention absolutely innovative and better and when asked why, 33.33% of them cited the following reasons:

- Reduction of post-operative effects and outcomes due to general anesthesia, which are the responsibility of the nurse at the time of intra and post-operative monitoring;

- Presence of a greater awareness of the patient which therefore, in most cases, makes him more compliant in the perioperative period;

- Reduction of intraoperative risks due to general anesthesia, such as difficult intubation;

- Abnormal reduction of the possibility of post-operative neurological deficits that would complicate the patient's life and also the work of the nurse, who should totally replace the patient by dedicating a lot of time to him and who instead, can at the same time also dedicate himself to other hospitalized patients, keeping account of the shortage of personnel.

For all the reasons taken into consideration, it can therefore be said that the awake craniotomy surgery is really a highly resolving technique for patient and doctor and in particular for the nurse, who manages the entire path of assistance in the pre, intra and postoperative [1-18].

Suggestions for improving the care of the aforementioned patient in the near future.

In conclusion, nurses were given the opportunity to express personal considerations and to propose possible improvements within the care plan in order to significantly increase the already evident benefits. The 14% of nurses who expressed that they know this *avant-garde* and that it is part of the slice of those who find it absolutely better from a care point of view, declared the importance of considering and implementing more the psychological aspect, which is actually considered fundamental at all stages. This very sensitive data highlights how the nurse truly feels the need to be able to offer support that is not only technical, but above all emotional. It is important to note how central is the idea of considering the patient in a holistic sense, not just as a number, an object to be provided with services, but a person. A person in need of care, affection, emotional support and advice. We can therefore paraphrase what they said, saying that the nurse must regain that figure of health educator, a person who not only cares but takes care of those in front of him. It should be noted the importance and the advantage of the awake craniotomy, for the doctor who operates who can minimize the errors that would result in permanent deficits for the patient, for the patient who actively participates, feeling aware of himself and his role, risking fewer complications and intra and post-operative outcomes and above all for the nurse who has to guarantee the patient a degree of assistance that requires less alertness. The nurse will recognize himself as a person and not only as a professional, he will rediscover his importance as an educator and above all he will begin to take into consideration those psychological skills that are attributed to him by his professional profile and code of ethics, which for a long time, in the era of digitization and technology, have been pushed aside.

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