

## “Awake-awake” or “conscious sedation” for awake craniotomies?

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Dear Editor,

In a recent review in this journal about patients' response to awake craniotomy, Milian et al. [5] distinguished between studies using an asleep-awake protocol and those using an awake-awake protocol. We are concerned that the latter term could be misleading and might confuse readers. We have introduced the term awake-awake-awake technique for our protocol using no sedation, as well as hypnotic communication [2–4]. A search for “awake-awake” in PubMed also yields only our own publications. In contrast, in Table 1 of their review article, Milian et al. list eight references under an anesthesiological protocol “awake-awake”. Our study was not included in their review, although we have tested patients' response according to the questionnaire of the European Low Grade Glioma Network (ELGGN) [4]. Obviously, in the review of Milan et al., a different definition is used for “awake-awake.” In none of the original articles cited in the review is the term “awake-awake” mentioned, but the term “conscious sedation” is used. And no description of a specific intra-operative communication is found in these published protocols.

Our procedure is based on the fact that “surgical patients behave as if they were hypnotized” [1], i.e., they are in a natural trance state with highly elevated attention and suggestibility. There, suggestions—verbal and nonverbal—are given according to hypnotherapeutic principles [2, 3]. They, for instance, include dissociation to a “safe place,” reframing of disturbing noises like suctioning and drilling, and analgesic

suggestions that result in gross reduction or avoidance of opioids in our study. All the discomforts reported in the review of Milian et al., such as anxiety, pain, stress and strain, are dependent on psychological aspects and are accessible to psychotherapeutic interventions. They all are addressed in our intra-operative communication. For instance, with regard to postural pain, it is essential whether the patient is “on an operating table” for 4 h, or in the sand at the beach, or hiking in the mountains.

By introducing a specific communication, sedation became dispensable, leaving the patient fully awake throughout the whole craniotomy and providing the best conditions for an optimal testing. We feel that this procedure for awake craniotomies, which we named the “awake-awake-awake” technique, should not be mixed up with conscious sedation without specific communication, as it is in the review of Milian et al.

**Conflicts of interest** None.

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