

# Awake craniotomy procedure for near eloquent cortical area for brain tumor case series: initial experience and the anesthetic challenges

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**Introduction:** The main objective of the surgical procedure is to achieve maximum resections with minimal functional neurological deficits for the patient with intrinsic tumors near the eloquent cortical area. The awake craniotomy procedure is currently the key option for achieving optimum safe resection. We report our two years of experience in establishing an awake craniotomy in the Kariadi General Hospital, evaluating the adoption of the technique and the outcome of the surgery.

**Methods:** This is a retrospective study analyzed data from all patient's medical records, who have performed an awake craniotomy from January 2018 to January 2020 at Dr Kariadi General Hospital, Semarang, Indonesia. The specific anesthesia technique designated for this procedure was adopted. Sonography was introduced to determine the border of the tumor before and after surgery. Phase reversal using the cortical grid was used to recognize the central sulcus, motor and sensory cortex. Cortical stimulation using a monopolar stimulator was used to recognize the eloquent region surrounding the tumor. Enbloc resection was done with a fully conscious patient as well as with careful neurological testing during surgery.

**Result:** The pre-operative Karnofsky Performance Status (KPS) mean 63, with remarkable improvement to 70. The length of surgery was varying from 120 to 420 minutes with mean was 270 min. Our procedure was done for tumors situated in the Broca area in 3 cases, motor gyrus in 7 cases and premotor gyrus in 3 cases. None of the patients needed intensive post-operative care. Pathological findings show glioma in 9 patients, metastases in 3 patients and tuberculoma in 1 patient.

**Conclusion:** Based on our experience, Awake craniotomy is a technique designed to preserve the eloquent cortex and improving our knowledge of the functional structure of brain centers. Together with the neurosurgeon, neurophysiologist, neuro anesthesia, and operating room (OR) nurse team, these advanced neurosurgery procedures can be performed without hesitation in developing countries.

## Keywords

[awake craniotomy](#) | [eloquent cortex](#) | [functional brain centers](#)