

Learning Objective

To discuss unique perioperative anesthetic considerations for optimizing safety and health outcomes during a partial awake craniotomy for a resection of a left parietal mass involving an intra-operative seizure.

Background

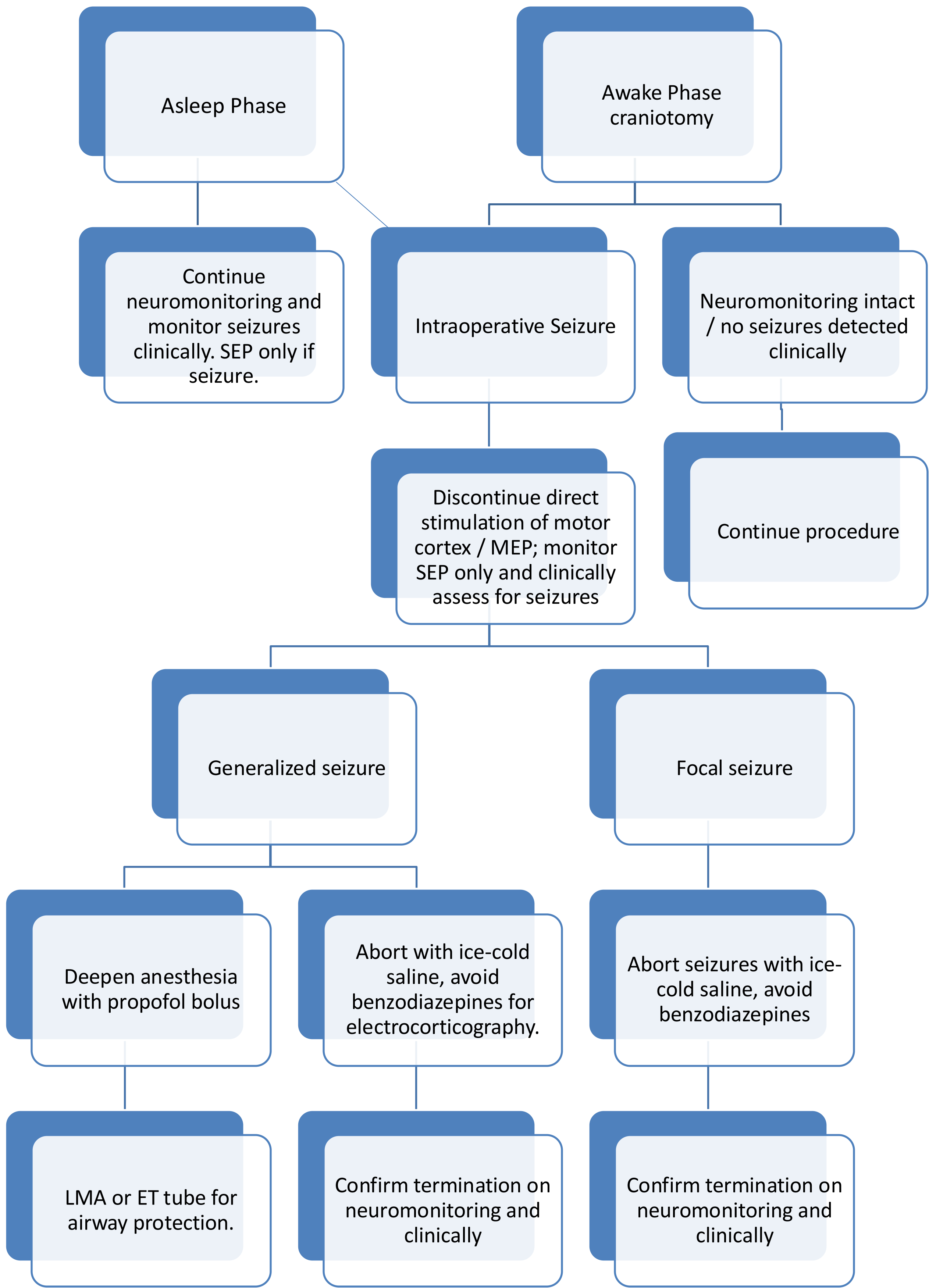
Awake craniotomy is commonly used anesthetic technique that allows for functional cortical mapping in intracranial tumor resection involving eloquent cortex. Other benefits include decreased length of stay and ICU admissions, and avoiding the risk of general anesthesia^[1].

Seizures are a known complication during awake craniotomy (incidence of 2-20%^[2]) and mostly occur during cortical stimulation for brain mapping. Generalized seizures should be managed promptly to avoid airway compromise and patient injury.

Case Presentation

Patient is a 23-year-old man, with history of asthma, who presented with sudden onset of seizure. Further imaging revealed a 3cm mass in the left parietal lobe suggestive of a primary glial neoplasm. The patient underwent an elective sleep-awake-sleep (SAS) craniotomy and tumor resection. We placed a 14G IV in the forearm and a radial arterial line in addition to standard ASA monitoring. After induction with propofol and dexmedetomidine, a scalp block before incision. The patient was transitioned to a fully awake state with minimal sedation for cortical mapping.

Direct cortical stimulation during tumor mapping precipitated an intraoperative seizure which was managed with cold saline irrigation and deepened sedation without benzodiazepines; direct stimulation was discontinued, and serial motor and sensory tests were performed during the remainder of the resection with neuromonitoring and without focal deficits. The patient was deepened for the closing before waking up without issue.



Algorithm for intraoperative seizures during SAS craniotomy. Adapted from UpToDate^[1].

References

1. Anesthesia for awake craniotomy. *UpToDate*. Accessed November 24, 2025. https://www.uptodate-com.proxy.libraries.rutgers.edu/contents/anesthesia-for-awake-craniotomy?search=seizure%20craniotomy&source=search_result&selectedTitle=4~150&usage_type=default&display_rank=4
2. Nossek E, Matot I, Shahar T, et al. Intraoperative seizures during awake craniotomy: incidence and consequences: analysis of 477 patients. *Neurosurgery*. 2013;73(1):135-140. doi:10.1227/01.neu.0000429847.91707.97
3. Hervey-Jumper SL, Li J, Lau D, et al. Awake craniotomy to maximize glioma resection: methods and technical nuances over a 27-year period. *J Neurosurg*. 2015;123(2):325-339. doi:10.3171/2014.10.JNS141520

Acknowledgements

Benjamin Landgraf, MD, Program Director
Department of Anesthesiology and Perioperative Medicine, Rutgers Health

Domain	Intervention	Rationale / Benefits
Seizure Management	Abortive measures	Stop stimulation, cold saline, airway protection, propofol bolus
	Avoid benzodiazepines	Preserve neuromonitoring and functional mapping
Anesthetic Technique	SAS regimen – propofol induction; dexmedetomidine & remifentanyl	Enables functional mapping and clinical seizure assessment; Preserves spontaneous ventilation and airway reflexes; Provides titratable, rapid-recovery sedation
Interdisciplinary Teamwork	Anticipate cortical stimulation	Improves awareness of seizure risk and early detection
	Real-time communication	Supports coordinated response and intraoperative adaptability

Discussion

In this case, direct electrocortical stimulation of the hand motor cortex triggered a focal seizure with right arm contractions and concern for secondary generalization. Stimulation was stopped, cold saline irrigation was applied, and propofol boluses were administered to terminate the seizure, as confirmed by neuromonitoring and clinical resolution. The anesthesia team instead performed serial motor (holding a tennis ball) and sensory tactile exams to guide resection completion.

Interdisciplinary communication was critical throughout this case. Close coordination with the neurosurgical team allowed for the anesthesia team to anticipate cortical stimulation, monitor for early seizure signs, and adapt the approach in real time. Benzodiazepines were withheld to preserve neurophysiologic monitoring. This case highlights the importance of adaptable anesthetic planning and strong interdisciplinary teamwork in managing intraoperative complications and achieving safe surgical outcomes.