Intraoperative neurophysiological monitoring

- Use of a Brain Monitor in a Pediatric Scoliosis Spinal Fusion with Instrumentation to Prevent a Full Wake-Up Test: A Case Report
- Surgical cure of intractable epilepsy caused by retained intracranial foreign body under cortical electroencephalography monitoring: case report and literature review
- Balancing efficiency and diagnostic fidelity in SEP monitoring
- A pre-warning signalling in Motor Evoked Potentials Monitoring for Insular Glioma surgery. A preliminary study
- Intraoperative neurophysiological monitoring and patient-related outcomes in thoracic spinal meningiomas surgery: a single-center retrospective cohort study
- Intraoperative neurovascular considerations for efficient intraventricular meningioma surgery: illustrative case
- Assessing Surgical Outcomes in Cervical Degenerative Disease: The Role of Intraoperative Neurophysiological Monitoring
- The need for neuromonitoring during growing rod surgical distractions

Intraoperative neurophysiological monitoring (IONM) or intraoperative neuromonitoring is the use of electrophysiological methods to monitor the functional integrity of certain neural structures (e.g., nerves, spinal cord, and parts of the brain) during surgery. The purpose of IONM is to reduce the risk to the patient of iatrogenic damage to the nervous system, and/or to provide functional guidance to the surgeon and anesthesiologist.

Indications

see Intraoperative neurophysiological monitoring indications.

Anesthesia

Intraoperative neurophysiological monitoring Anesthesia.

Checklist

see Vitale checklist

Modalities

Intraoperative neuromonitoring encompasses a variety of different modalities in which different neuropathways are monitored either continuously or at defined time points throughout a neurosurgical procedure. Surgical morbidity can be mitigated with careful patient selection and thoughtful implementation of the appropriate neuromonitoring modalities through the identification of eloquent areas or early detection of iatrogenic pathway disruption [1)].

Evoked potentials:

Somatosensory evoked potentials (SSEP)

Motor evoked potential (MEP)

Brainstem auditory evoked potentials (BAEP)

Visual evoked potentials (VEP)

Electroencephalography (EEG)

Electromyography (EMG) .

Spontaneous-EMG.

Triggered electromyography.

see Intraoperative stimulation mapping:

Direct cortical stimulation

Case series

Intraoperative neurophysiological monitoring case series.

Special Topic Issue

Seidel K, Krieg SM. Special Topic Issue: Intraoperative Neurophysiological Monitoring. J Neurol Surg A Cent Eur Neurosurg. 2021 Jul;82(4):297-298. doi: 10.1055/s-0041-1731685. Epub 2021 Jul 14. PMID: 34261154.

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https://www.ncbi.nlm.nih.gov/books/NBK563203/

1)

Wong AK, Shils JL, Sani SB, Byrne RW. Intraoperative Neuromonitoring. Neurol Clin. 2022 May;40(2):375-389. doi: 10.1016/j.ncl.2021.11.010. Epub 2022 Mar 31. PMID: 35465881.