Towards evidence-based guidelines for electrophysiological monitoring during spinal surgery

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Disclosures

• None

Human Spinal Cord Monitoring

VEP
SEEP
What is the “standard of care”?

Diagnosis or treatment?

The nuts and bolts
### Strength of the evidence

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<td>Monitoring as a therapeutic adjunct?</td>
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Is monitoring cost-effective?

Recommendations (Diagnostic)

- **Diagnostic:**
  - **Level I:**
    - Multimodality intraoperative monitoring (IOM), including somatosensory evoked potentials (SSEP) and motor evoked potentials (MEP) recording during spinal cord/spinal column surgery is a reliable and valid diagnostic adjunct to assess spinal cord integrity and is recommended if utilized for this purpose.
  - Motor evoked potential recordings are superior to SSEP recordings during spinal cord/spinal column surgery as diagnostic adjuncts for assessment of spinal cord integrity and are recommended if utilized for this purpose.
  - **Level II:**
    - SSEP recordings during spinal cord/spinal column surgery are reliable and valid diagnostic adjuncts to describe spinal cord integrity and are recommended if utilized for this purpose.

Recommendations (Therapeutic)

- **Therapeutic (Preventive):**
  - **Level II:**
    - Multimodality intraoperative monitoring (IOM), including somatosensory evoked potentials (SSEP) and motor evoked potentials (MEP) recording, during spinal cord/spinal column surgery does not improve gross total tumor resection or improve neurological outcome, when utilized during intramedullary tumor resection procedures (no therapeutic benefit).
  - **Level III:**
    - The preponderance of the existing medical evidence on the use of electrophysiological monitoring, including SSEP and MEP recordings, during spinal cord/spinal column surgery suggests there is no therapeutic relationship with neurological outcome; it is not recommended for this purpose. While IOM may detect a neurological injury during spinal surgery, its use does not result in improved neurological outcome, even when IOM alerts occur.
The lateral caveat?

Recommendations (Lateral access)

- **Therapeutic (Preventive):**
  - **Level III:**
    - While IOM may be considered to be integral to the technique for lateral approaches, there is insufficient evidence to support a recommendation for or against its use as a therapeutic adjunct with respect to a reduction in iatrogenic nerve injury and/or improvement in post-operative neurological outcome.

The bottom line...
The bottom line...

Thank you
Questions?