

# Somatosensory evoked potentials for spine surgery

## Indications

Spine and spinal cord surgery including scoliosis and Kyphosis correction with instrumentation, spinal cord decompression/stabilization, anterior and posterior spinal fusions (cervical, thoracic, and thoracolumbar), the release of tethered cord, correction of spina bifida, resection of the tumor, cyst, aneurysm or arteriovenous malformation of the spinal cord

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Monitoring of [somatosensory evoked potentials](#) (SSEPs) serves as an early warning system to detect [spinal cord injury](#) and is correlated with postoperative [sensory](#) findings. It is an indirect indicator of [motor function](#).

A study aimed to evaluate the usefulness of intraoperative SSEPs monitoring as a stand-alone tool during spinal surgeries when motor evoked potentials are not available, to prevent and predict new postoperative neurologic deficits. Motor evoked potentials were not used as the equipment needed to record them was not available at the time of this study.

A study included 50 patients, aged 14 to 67 years, undergoing extramedullary manipulations, decompression of an epidural abscess or neoplasm, removal of intramedullary tumor, or arteriovenous malformation or spine correction procedures. Somatosensory evoked potentials were analyzed for latency and peak-to-peak amplitude. Critical SSEP changes were defined as a 50% decrease in amplitude or a 10% increase in latency.

Somatosensory evoked potentials had an overall sensitivity of 81.8%, a specificity of 100%, a positive predictive value of 100%, and a negative predictive value of 91.3%.

Intraoperative SSEPs have proved to be highly sensitive and specific for iatrogenic injury, mechanical stress caused by cord traction/compression, dural traction, lowered systemic blood pressure, and cord hypothermia. The reversibility of intraoperative SSEP changes showed a highly significant relation to the number of cases with new postoperative deficits as well as type and site of pathologic study ( $P = 0.00$ ,  $P = 0.01$ , and  $P = 0.00$ , respectively) but not with the level of pathologic study ( $P = 0.49$ )<sup>1)</sup>.

see [Intraoperative somatosensory evoked potential monitoring during anterior cervical discectomy and fusion](#).

<sup>1)</sup>

Abdelkader AA, Zohdi A, El Gohary AM, El-Hadidy RA, Almahdy RA. Somatosensory Evoked Potentials as a Stand-Alone Tool During Spine Surgery: An Egyptian Preliminary Report. J Clin Neurophysiol. 2019 Jan 28. doi: 10.1097/WNP.0000000000000562. [Epub ahead of print] PubMed PMID: 30694942.

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