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## **Intraoperative Monitoring and Diagnostic Services**

*May Issue*

### ***Multimodality IOM Improves Adverse Event Prediction During Lumbosacral Surgery***

The place of intraoperative monitoring in lumbosacral spine surgery has been debated. In this important prospective study, multimodal monitoring combining sensory and motor evoked potentials with EMG monitoring showed a sensitivity of 90% and specificity of 99.7% for the detection of adverse outcomes. We believe that MIOM offers an improvement on single modality monitoring during spinal procedures for prediction and likely amelioration of adverse outcomes.

**Multimodal intraoperative monitoring (MIOM) during 409 lumbosacral surgical procedures in 409 patients.** Sutter MA, Eggspuehler A, Grob D, Porchet F, Jeszenszky D, Dvorak J. Eur Spine J. 2007 Nov; 16 Suppl 2: S221-8.

A prospective study on 409 patients who received multimodal intraoperative monitoring (MIOM) during lumbosacral surgical procedures between March 2000 and December 2005 was carried out. The objective of this study was to determine the sensitivity and specificity of MIOM techniques used to monitor conus medullaris, cauda equina and nerve root function during lumbosacral decompression surgery. MIOM has increasingly become important to monitor ascending and descending pathways, giving immediate feedback information regarding any neurological deficit during the decompression and stabilization procedure in the lumbosacral region. Intraoperative spinal- and cortical-evoked potentials, combined with continuous EMG- and motor-evoked potentials of the muscles, were evaluated and compared with postoperative clinical neurological changes. A total of 409 consecutive patients with lumbosacral spinal stenosis with or without instability were monitored by MIOM during the entire surgical procedure. A total of 388 patients presented true-negative findings while two patients presented false-negative and 1 patient false-positive findings. Eighteen patients presented true-positive findings where neurological deficit after the operation was intraoperatively predicted. Of the 18 true-positive findings, 12 patients recovered completely; however, 6 patients recovered only partially. The sensitivity of MIOM applied during decompression and fusion surgery of the lumbosacral region was calculated as 90%, and the specificity was calculated as 99.7%. On the basis of the results of this study, MIOM is an effective method of monitoring the conus medullaris, cauda equina and nerve root function during surgery at the lumbosacral junctions and might reduce postoperative surgical-related complications and therefore improve the long-term results.

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