AB144. Intra-operative spinal cord monitoring during spinal cord surgery: does it have any clinical value?

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Background: Spinal cord surgery is a technically challenging endeavour with potentially devastating complications for patients and surgeons. Intra-operative neurophysiological monitoring (IONM), or spinal cord monitoring (SCM), is one method of preventing and identifying damage to the spinal cord. At present, indications for its use are based more on individual surgeon preference and for medico legal purposes. Our study aimed to determine IONM's utility as a clinical tool.

Methods: This is a retrospective case series of 169 patients who underwent spinal surgery with IONM at two institutions between 2013 and 2018. Signal changes detected were recorded as well as the surgeon's response to these changes. Patients were followed up to one-year post-surgery using our institution's EVOLVE system. The main outcome measure in this study was new post-operative neurological signs and/or symptoms and what effect, if any, IONM and subsequent surgeon intervention had on these complications.

Results: Indications for IONM included cervical stenosis, cervical disc prolapse, unstable fractures and bony metastases. Signal changes were observed in 33% (n=55) of cases. Twenty-four of these patients responded to re-positioning. There were 7 total complications with full resolution by 12 months. False negative rate was 2.4% (n=4). There was one true positive. The largest cohort of patients included those who experienced no signal changes and subsequently no post-operative deficits (n=124).

Conclusions: IONM is a non-invasive clinical tool that may be utilised for medicolegal reasons. Its use as a clinical tool is questionable given its relatively high false negative rate and low false positive rate.

Keywords: Intra-operative neurophysiological monitoring (IONM); spinal cord monitoring (SCM); spinal surgery; signal changes

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