Patient-Centered Neurophysiological Monitoring Enhances the Quality and Safety of Minimally Invasive Spinal Surgery

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Minimally invasive spine surgery is has significant popularity. A distinguishing feature is they obscure the surgeon's view of the anatomy and the underlying neural structures at risk. This is particularly true of lateral procedures. Lateral procedures risks can be significantly minimized by quality patient-centered monitoring procedures.

Lateral procedures described in 1990's reported a greater than 30% neural complication rate. Given the complexity of anatomy in the lumbo-sacrial plexis and the "hidden" anatomy transecting the psoas muscle, it is logical that this procedure results in increased complications. Addition of quality patient-centered neuro-monitoring to assist in mapping the underlying anatomy and monitoring for avoidance of injury is recognized and essential.

We report our retrospective review over Fifteen years with 1593 consecutive cases of extreme lateral interbody fusion using various manufacturer's hardware and seven different surgeons.. Our series included 2354 implants. All patients were monitored by credentialed neurophysiologists.

While attractive to use a "surgeon directed" model, this approach places the important function of intraoperative monitoring squarely in the hands of, and the responsibility on, the operating surgeon whose attention is importantly focused on the surgical procedure.

While surgeons are capable of quality monitoring, he/she's attention appropriately needs to be placed on the surgical procedure with neuromonitoring carried out by highly skilled neurophysiologists trained extensively with the surgeon for the specific procedures and necessary risk prevention methods to ultimately achieve a quality outcome.

Our series shows the overall incidence of perioperative neurological deficits beyond four weeks at only a 1.68%, significantly lower than other reported series. We believe comprehensive neuromonitoring, in the hands of experienced neurophysiologists, presents a greater likelihood of significantly lower post-operative deficits.

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BIOGRAPHY

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Bernard Allan Cohen is the Founder, CEO and President of Neurological Monitoring Associates, LLC (NMA). His career, spanning more than 45 years, has been devoted to clinical care of patients involving analysis of electrical activity of the brain and nervous system during high-risk surgery.

He teaches neuromonitoring methods around the world and has helped several new programs and societies in their development stages. He has a strong focus on global humanitarian efforts to bring neuromonitoring to underdeveloped and technologically evolving countries and medical centers where the capabilities have not been achieved.