

## Evaluation Of The Usage Of Intraoperative Neuromonitoring In Adolescent Idiopathic Scoliosis Surgery – A HUKM Experience

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### INTRODUCTION:

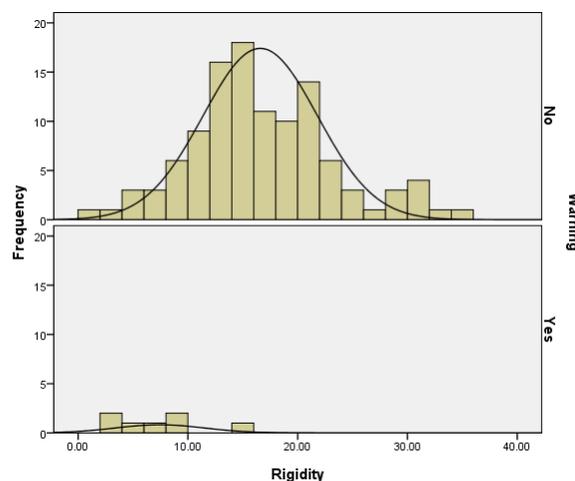
Scoliosis is a complicated tri-dimensional spinal deformity involving lateral curvature of the spine, sagittal profile imbalance as well as vertebral body rotation. Paralysis is one of the most feared complication of spinal surgery. The Stagnara wake-up test had been used for intraoperative assessment of spinal cord function during scoliosis surgery for many years. We look into the outcome of tri-modality protocol using Trans-Cranial Motor Evoked Potentials (Tc-MEP), Somatosensory Evoked Potentials (SSEP), and Electromyography (EMG) for intraoperative electrophysiological monitoring during Adolescent Idiopathic Scoliosis (AIS) surgery in Hospital Canselor Tuanku Muhriz (HCTM).

### METHODS:

This is a 2-year retrospective study on outcome of tri-modality electrophysiological neuromonitoring during Posterior Spinal Instrumentation and Fusion (PSIF) for AIS in HCTM. Patient data and parameters were collected and reviewed from HCTM's Hospital Information System (HIS), Picture Archiving and Communication System (PACS) and Bed Head Tickets (BHT).

### RESULTS:

Seven (7) out of one hundred and eighteen (118) cases had intra-operative warning signals. All of the patients had no neurological deficit post-operatively. Rigidity of the spinal curvature has a statistically significant influence on the occurrence of warning signal. Duration of surgery, haemoglobin drop, degree of correction and BMI did not influence on the occurrence of warning signal.



### DISCUSSIONS:

This study showed that the outcome of multi-modality electrophysiological monitoring in PSIF for AIS is good, evidenced by no neurological deficit in 118 patients for a period of 2 years and 6 months. We found that the more rigid the scoliosis was, the more likely the occurrence of warning signal during PSIF. Other causes of warning signals were deep anaesthesia (2 cases), hypotension (2 cases), and pedicle screw trajectory (2 case).

### CONCLUSION:

We found none of the neuromonitoring modalities is superior to another and they are best used in tandem in a multi-modality setting to replace Stagnara wake-up test for AIS surgeries.

### REFERENCES:

Pelosi L, Lamb J, et al. Combined monitoring of motor and somatosensory evoked potentials in orthopaedic spinal injury. Clin Neurophysiol. 2002; 113:1082-1091.