Spinal Dysmorphism

A retrospective analysis of a pediatric female patient was conducted who underwent 12 operations for the correction of scoliosis, tethered cord, and split spinal cord wherein IONM played an important role. From age 3 to 6, she underwent six procedures including a release of the tethered cord, resection of the filum terminale, removal of a T11-T12 bony spur, release of L3 adhesions, repair of subcutaneous meningocele, and correction of scoliosis with a vertical expandable prosthetic titanium rod (VEPTR) technique without the use of IONM. However, a multimodality IONM protocol with somatosensory evoked potentials, transcranial electrical motor evoked potentials (TCeMEP), and an electromyogram was utilized during the later procedures. At age 6 (the seventh procedure), a VEPTR expansion was performed, with loss and recovery of the lower extremity motor evoked potentials. The postoperative magnetic resonance imaging (MRI) showed a partial split cord malformation with retethering of the spinal cord. We repaired her split cord malformation and tethered cord while employing IONM. Using IONM for her operation was crucial because a sudden significant loss of TCeMEP resulted in a cancellation of the procedure; the MRI showed a thick remnant attached to the spinal cord. If the procedure was performed without IONM, we could have missed the underlying pathology, an error that may have resulted in paraplegia. We strongly recommend using IONM during high-risk surgical procedures to help significantly reduce the risk of permanent postoperative complications [1].

1)
Jahangiri FR, Sayegh SA, Azzubi M, Alrajhi AM, Annaim MM, Al Sharif SA, Aziz T, Al Eissa S. Benefit of Intraoperative Neurophysiological Monitoring in a Pediatric Patient with Spinal Dysmorphism, Split Cord Malformation, and Scoliosis. Neurodiagn J. 2017;57(4):295-307. doi: 10.1080/21646821.2017.1396780. PubMed PMID: 29236600.

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