

## **Paraplegia Following Scoliosis Surgery**

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**Introduction:** Neurological deficit following posterior spinal fusion is a rare but devastating complication. Most of these occur during or immediately following instrumentation. We present a case where sudden loss of evoked potentials occurred prior to instrumentation, and the patient was left with a persistent motor and sensory deficit.

**Case Report:** 13 year old, 35 Kg female with severe arthrogyriposis and severe rigid 90 degree thoracic dextroscoliosis was scheduled for APSPF. The patient had fixed deformities of bilateral upper and lower extremities with leg length discrepancy but was ambulatory with forearm crutches. She also had progressive restrictive pulmonary compromise secondary to the scoliosis. Preoperative management was significant for initiation of nasal cannula oxygen for desaturations noted on preoperative sleep study and documentation of tracheal stenosis (from previous tracheostomy for difficult airway) and allergy to Amoxicillin (rash). Baseline BP 110/ 70 mmHg.

Standard ASA monitors, an arterial line and central line were placed after induction and intubation. A 28 Fr DLT was then placed with help of a lightwand without difficulty. Intravenous anesthesia was maintained with infusions of propofol 200 to 250 mcg/kg/min and fentanyl 2mcg/kg/hr. Patient was then turned to LLD position and anterior thoracoscopic spinal release and fusion from T5 - T11 was performed. All SEP and tcMEP responses remained stable throughout the anterior procedure. The patient was then placed prone for posterior spinal fusion. Baselines established for the posterior procedure were similar to those obtained for the anterior procedure. Due to the inability to obtain lower extremity tcMEPs, tcMEP monitoring was stopped during the posterior procedure. Surgeons then proceeded to do removal of facet joints from T4 - T5 to T12 – L1 and ligamentum flavotomies. Tibial nerve SEP responses were lost following removal of the ligamentum flavum in this area and did not return to baseline by the end of the procedure. The surgeons were informed of the lost responses after confirmation of loss of monitoring (20 minutes after initial loss). Following this the surgeons continued with pedicle screws placement followed by rod placement and bone graft.

During the procedure mean BP was kept between 50-65. PRBCs (2 units) and 320 ml of cell saver blood was given to maintain Hct > 28%. An adequate urine output of 1ml/Kg/hr was noted throughout. There was no precipitous drop in BP, sudden blood loss, metabolic fluctuations or additional anesthetic administration coincident with the loss of SEPs.

The wound was then closed, patient turned supine, right tube thoracostomy performed and patient taken to ICU intubated and sedated with monitors. In the ICU, the patient later woke up with paraplegia and B/L LE sensory loss. Bowel and bladder function was adequate.

**Discussion:** The reported incidence of neurological deficit following posterior spinal fusion is from 0.23 % to 0.72 %.(1,2) Monitoring SSEP/MEP responses have been shown to be an effective way to reduce neurologic deficits following surgery.(3) What is unique about this case is that SSEPs were lost prior to instrumentation at a time when the patient was relatively euvoletic (Hg 9) and with a mean blood pressure between 50-60. Thus, perioperative monitoring of SEP's is a useful technique for the detection of neurologic problems during spinal fusion surgery, but detection of problems does not prevent a loss of function from occurring and being irreversible if this occurs.

### **References:**

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2. Meyer PR, Cotler HB, Gireesan GT: J Clin Orthop 1988;237:125-131.
3. Nuwer MR, Dason EG, Carlson LG, Kanim LE: Electroenceph Clin Neurophysiol 1995;96:6-11.