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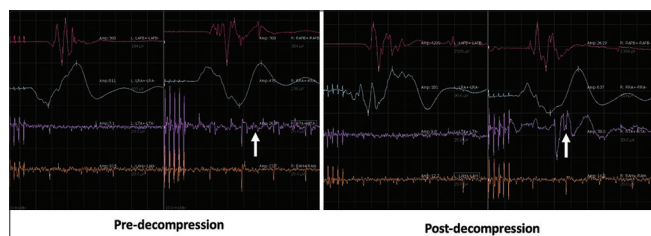
## Intraoperative return of motor evoked potential following decompressive laminectomy: An early indicator of successful decompression?

Ossification of the posterior longitudinal ligament (OPLL) is a condition that is characterized by extensive calcification. OPLL can lead to compressive myelopathy of variable severity. Surgical decompression is the choice for thoracic OPLL associated with compressive myelopathies.<sup>[1,2]</sup> We report a novel utility of intraoperative motor evoked potential (MEP) monitoring during the conduct of thoracic decompressive laminectomy for OPLL.

A fifty-year-old male presented with lower limb weakness for a three-month duration. Spastic paraparesis of the bilateral lower limb with a motor power grade of 2 was noted upon neurological examination. Preoperative magnetic resonance imaging revealed OPLL at the D10-D11 vertebral level with spinal cord compression. The patient was planned for two-level decompressive laminectomy under intraoperative transcranial MEP monitoring. Following induction of anesthesia, needle electrodes were placed in the rectus abdominus (RA), tibialis anterior (TA), and abductor hallucis longus (AHL) muscles, bilaterally. A baseline MEP response was not recordable in the lower

limb muscles (TA and AHL) bilaterally on multiple occasions before decompression [Figure 1, pre-decompression]. On the contrary, a good MEP response was recorded in the RA muscle on both sides. Propofol target-controlled infusion (TCI) was used for intraoperative anesthesia maintenance with a target plasma concentration of 3–4 mcg/ml with avoidance of muscle relaxant. The patient had stable intraoperative hemodynamics with normothermia. Following decompressive laminectomy, an immediate MEP response was recordable consistently in the right tibialis anterior muscle that was not present before decompression [Figure 1, post-decompression]. Following an uneventful intraoperative course, the trachea was extubated and the patient was shifted to the recovery unit. There was no immediate improvement in lower limb muscle power and spasticity postoperatively, but the patient was able to walk with support, with improvement in lower limb weakness after a lapse of one month.

The main purpose of intraoperative neurophysiological monitoring in spinal decompression is to prevent irreversible



**Figure 1: Absent MEP in the right tibialis anterior muscle pre-decompression with the return of MEP response post-decompression (as indicated by lateral projections)**

neurological injury. An ideal scenario is the one in which there is no baseline neurological deficit and there is a good MEP response to start with and any change in MEP responses from the baseline can act as alarming criteria. Another scenario to consider is a recordable MEP with decreased amplitude of compound muscle action potential at baseline that gets amplified following the spinal decompression due to enhanced neuronal conduction. Visser *et al.*<sup>[3]</sup> and Wi *et al.*<sup>[4]</sup> reported an improvement in MEP responses compared to baseline following spinal decompression in 8 patients and 29 patients, respectively. To the best of our knowledge, this is the first report demonstrating the intraoperative return of MEP response that was completely absent before decompression. As the return of MEP response was only one-sided, it was difficult to explain the asymmetric return. The correlation of intraoperative return or improvement in MEP responses to postoperative functional recovery is still a matter of debate. The anesthesiologist must not abandon the MEP monitoring and modify the anesthetic technique if a baseline MEP response is absent.

To conclude, the intraoperative return of MEP following decompressive laminectomy is unique and can have a possible early prognostic value that requires further clinical observations.

#### Declaration of patient consent

The authors certify that they have obtained all appropriate patient consent forms. In the form, the patient(s) has/have given his/her consent for his/her images and other clinical information to be reported in the journal. The patients understand that their names and initials will not be published and due efforts will be made to conceal their identity, but anonymity cannot be guaranteed.

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#### Conflicts of interest

There are no conflicts of interest.

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