The combined recordings of epidural-(D wave) and muscle motor evoked potentials (m-MEPs) have been proposed in many studies in intramedullary spinal cord tumor (IMSCT) surgery, although not all agree. Furthermore, the usefulness of the intraoperative monitoring of motor systems using these methods in other types of spine surgery has not yet been clearly confirmed. The aim of this study is to test the impact of intraoperative D wave on the monitorability and motor outcome in spine surgery.

METHODS: Intraoperative recording of posterior tibial nerve somatosensory potentials, lower limb m-MEPs (LLm-MEPs) and epidurally recorded D wave caudally to the surgical level was attempted in a total of 103 spine and spinal cord surgeries (23 IMSCT, 55 extramedullary spinal cord tumours and 25 myelopathies).

RESULTS: There was a 97.1 %, overall monitorability where at least 1 of the 3 modalities was applicable in 100 surgical procedures. Baseline LLm-MEPs were recorded bilaterally in 85 cases and unilaterally in 11. A caudal D wave was recorded in 97 cases. Transient, or persistent intraoperative modifications occurred in 14/23 IMSCT, 5/55 extramedullary spinal cord tumours and in 2/25 myelopathies. The presence of a persistent stable caudal D wave was predictive of a good motor outcome even when the LL-MEPs were absent and/or when lost during surgery.

CONCLUSIONS: Not only is intraoperative D wave recording to be considered mandatory in IMSCT surgery but it should also be attempted in other types of spine/spinal cord surgeries [1)]

1)
Tamkus A, Rice K. The incidence of bite injuries associated with transcranial motor-evoked potential monitoring. Anesth Analg. 2012 Sep;115(3):663-7. doi: 10.1213/ANE.0b013e3182542331. Epub 2012 Apr 20. PubMed PMID: 22523421.