Article Highlight

Article: Protecting the Genitofemoral Nerve during Direct/Extreme Lateral Interbody Fusion (DLIF/XLIF) Procedures

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Summary: This paper is a case study of a patient undergoing a direct lateral interbody fusion (DLIF) procedure with multimodality monitoring employed to protect the nervous system structures at risk. Somatosensory evoked potentials (SSEPs) of the lower extremities included posterior tibial nerve and femoral nerve stimulation to monitor the integrity of the lumbar plexus and dorsal column of the spinal cord. Upper extremity SSEPs were employed to monitor for positioning effect. Spontaneous and triggered electromyography (EMG) were utilized to check for nerve root irritation when advancing through the psoas muscle and during the procedure itself. Triggered EMG of the cremaster muscle during the approach allowed for identification of the genitofemoral nerve and subsequent redirection of the probe.

The author's conclusions are that during this DLIF procedure, multimodality monitoring including recording T-EMG of the cremaster muscle was effective at identifying proximity to the genitofemoral nerve. More generalized, the authors concluded that multimodality monitoring including SSEPs (posterior tibial, femoral and ulnar nerves) along with S-EMG and T-EMG of the cremaster muscle (along with ipsilateral muscles of the leg relevant to the surgical levels) is an effective means for monitoring against nervous system injury.

Comments: I personally know some of the authors of this paper and think they have done an excellent write-up of this case. Monitoring professionals should be aware that similar approaches exist that may have differences in hardware and the probe used during the approach. Each technology is proprietary to the various instrumentation companies that manufacture it. As a rule, it is best to familiarize yourself with the specific instrumentation and hardware used for the surgery, particularly the stimulation parameters of the probe (constant vs searching, etc). To my knowledge, and this has been verified with a personal communication to one of the authors, there is no equivalent way to monitor the genitofemoral nerve in female patients.

It will be interesting to see larger scale studies in the future using multimodality monitoring to protect the structures at risk during these lateral transpsoas approach surgeries to better quantify the risks inherent with the surgery and the benefit of risk reduction through monitoring.