The Utility of Intraoperative Transabdominal Muscle Action Potentials (TMAP) During Lateral Lumbar Interbody Fusion: Can We Predict Postoperative Neuropraxia?

Ashish Patel MD, Michael Rogers BS, Eshan Doshi

E-Presentation #: 49
• There are substantial limitations in current neuromonitoring modalities for predicting postoperative neuropraxia during lateral lumbar interbody fusion (LLIF).

• While t-EMGs are great for initial docking, there is a deficiency understanding nerve integrity post retractor docking.

• The most common method used to prevent postoperative neuropraxia is time in psoas, which is scientifically flawed.
Aims/Objectives

• TMAP has potential superiority over other modalities due to its ability to monitor the function of individual myotomes, specifically, quadriceps function during LLIF.

• Our study seeks to investigate the strengths and weaknesses of utilizing TMAP as a neuromonitoring modality.
Methods

- This is a retrospective study of 41 patients who underwent a pLLIF from August 2020 to June 2022. All patients underwent intraoperative TMAP neuromonitoring. All increases in stimulation needed to obtain a similar compound muscle action potential compared to a baseline stimulation were analyzed and compared to postoperative quadriceps strength.
Results

- Forty-one (41) patients underwent p-LLIF.

- There were no false negatives recorded.

- Reliable TMAP recordings were obtained in all patients, regardless of body habitus, blood pressure, body temperature or anesthetic.

<table>
<thead>
<tr>
<th>Threshold (mA)</th>
<th>Sensitivity</th>
<th>Specificity</th>
<th>False Positive</th>
</tr>
</thead>
<tbody>
<tr>
<td>150</td>
<td>100%</td>
<td>37.9%</td>
<td>62.1%</td>
</tr>
<tr>
<td>400</td>
<td>100%</td>
<td>83.3%</td>
<td>16.7%</td>
</tr>
</tbody>
</table>
Conclusions

- Reliably assesses lower extremity motor function during pLLIF.
- Extremely encouraging 0% false negative rate.
- Not influenced by blood pressure, body temperature, anesthetic or body habitus.
- Further work is underway to delineate the appropriate threshold to optimize specificity and decrease the false positive rate while maintaining high sensitivity.