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

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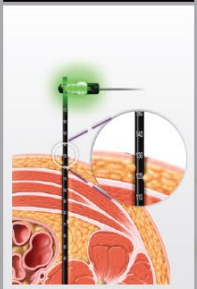
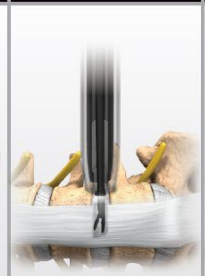
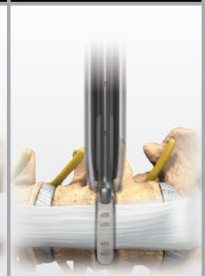
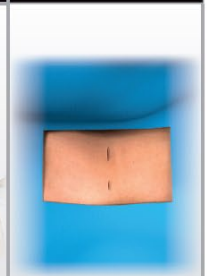
E-Presentation #: 49

Background

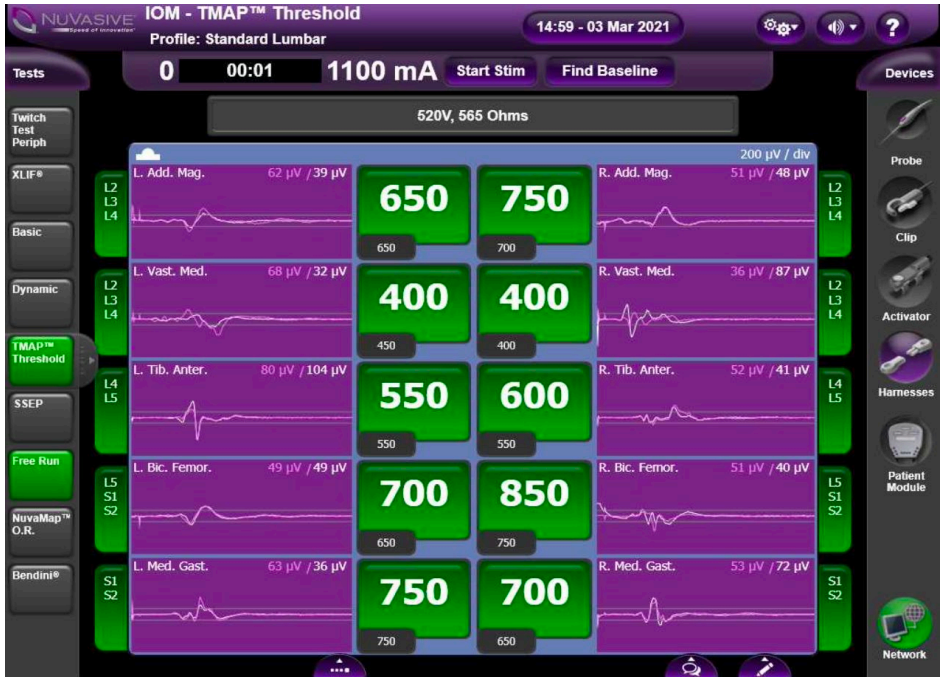
- There are substantial limitations in current neuromonitoring modalities for predicting postoperative neuropraxia during lateral lumbar interbody fusion (LLIF).
- While t-EMGs are great for initial docking, there is a deficiency understanding nerve integrity post retractor docking.
- The most common method used to prevent postoperative neuropraxia is time in psoas, which is scientifically flawed.

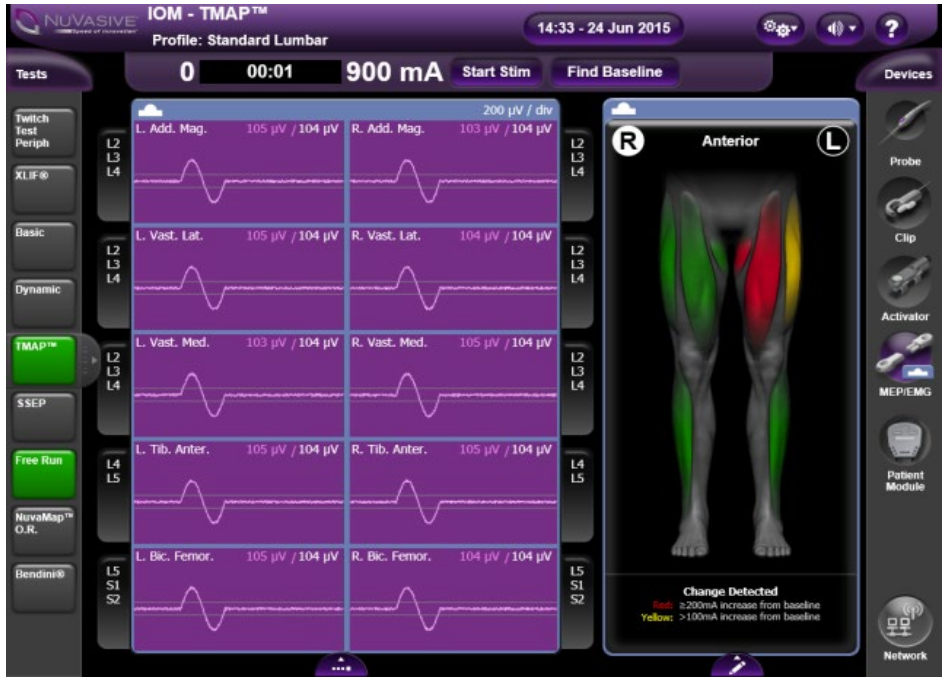
	PREP PATIENT	ACCESS	DISCECTOMY/ SIZING	IMPLANT	FIXATION	CLOSE
						
XLIF WITH TMAP	✓	✓	✓	✓	✓	✓
XLIF WITH TRADITIONAL EMG NEUROMONITORING	?	✓	?	?	?	?

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.

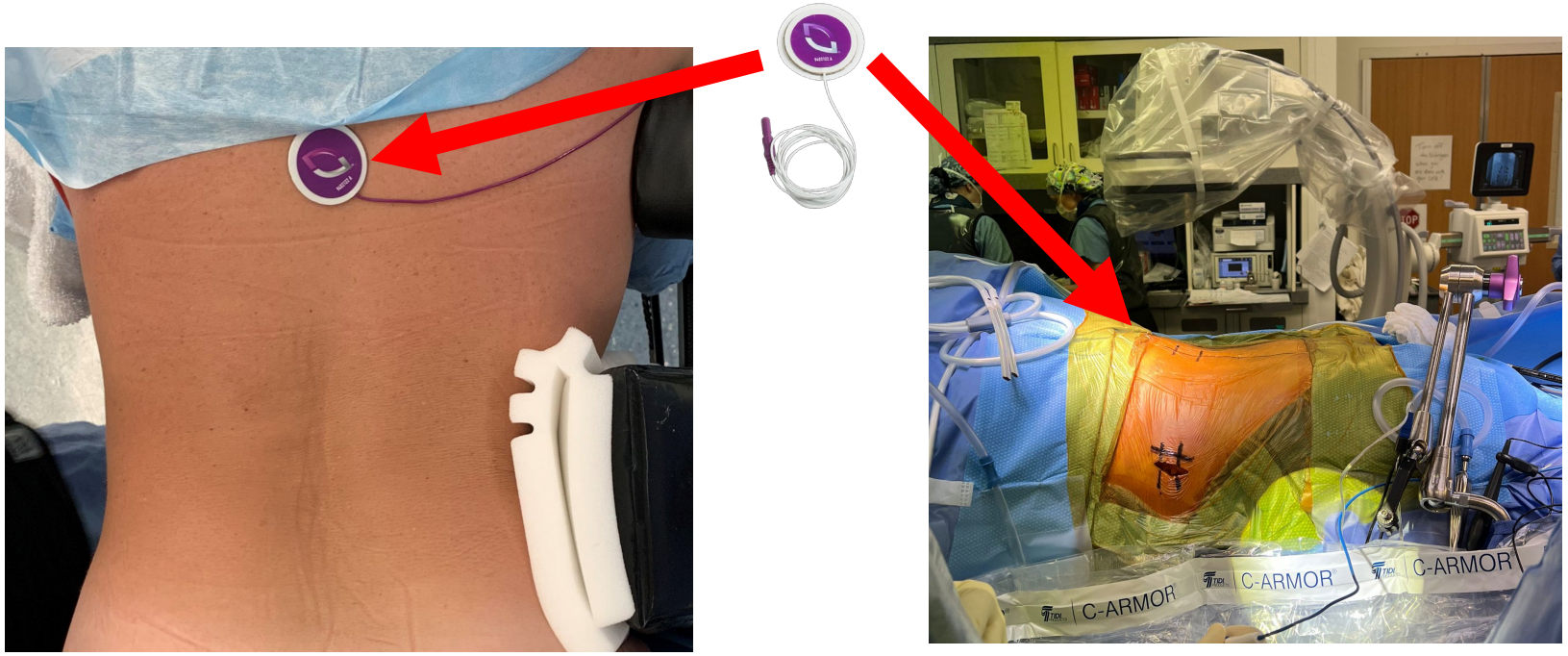
- Our study seeks to investigate the strengths and weaknesses of utilizing TMAP as a neuromonitoring modality.





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.

Threshold (mA)	Sensitivity	Specificity	False Positive
150	100%	37.9%	62.1%
400	100%	83.3%	16.7%

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.