

MetroHealth Medical Center

RESEARCH DAY 2023  
Abstract Submission Form

**Poster Title:** Preoperative evaluation of nerve transfer recipients after spinal cord injury using stimulated manual muscle testing

**Authors:** Cheng C, Perkins B, Keith MW, Bryden A, Chepla KJ

**Presenter's Name:** Kyle J. Chepla MD

**Location of Laboratory:** NA

**Category:** Clinical Research

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**Purpose:** Nerve transfers to restore upper extremity function after spinal cord injury have become increasingly popular. A key component of preoperative planning for these surgeries is identification of lower motor neuron (LMN) involvement in possible recipient nerves. Electrodiagnostic testing (EDX) has been shown to correlate closely with intra-operative findings, however such testing is time-consuming, costly, operator-dependent and may not be readily available in all clinical settings. Pre-operative stimulated manual muscle testing (SMMT) of potential recipient muscles is a standardized part of patient evaluation at our institution and correlation with intraoperative stimulation has not been previously reported.

**Methods:** A retrospective review was conducted for patients who underwent nerve transfer for tetraplegia. All patients with recorded preoperative SMMT and intraoperative stimulation of muscle contraction were included. Sensitivity, specificity, positive predictive value, and negative predictive value of SMMT were established.

**Results:** Nine patients met inclusion criteria. Thirty-seven nerve transfers were done on thirteen extremities and 97.3% (30/31) were accurately graded preoperatively by SMMT. Cumulatively, nerve assessment using SMMT had a sensitivity of 88.9%, specificity of 100.0%, positive predictive value of 100.0%, and negative predictive value of 96.6%.

**Conclusions:** The current study provides support for SMMT in preoperative assessment of upper versus lower motor neuron injury in patients undergoing nerve transfer for tetraplegia. SMMT demonstrated excellent specificity and positive predictive value. Compared to EDX, SMMT is inexpensive and easily done by the surgeon or therapist in the clinic.