



**To EMG or Not to EMG? That is the Question: The Value to Needle Electromyography in the Evaluation of Carpal Tunnel Syndrome**  
**Chirag Patel, MD, Radha Patel, Monica Carrion-Jones, MD**  
*Pitt County Memorial Hospital/East Carolina University Brody School of Medicine, Greenville, NC*



**Introduction:**

Carpal tunnel syndrome (CTS) is a commonly encountered peripheral mononeuropathy, with a reported prevalence of 51 to 125 cases per 100,000. Nerve conduction studies have been reported to diagnose CTS with a sensitivity of 49-84% and a specificity of 95% or greater. The American Association of Electrodiagnostic Medicine "Guidelines in Electrodiagnostic Medicine" advise that needle electromyography (EMG) is recommended as a practice option, meaning that the clinical utility is currently uncertain.

**Background:**

CTS can be subdivided into three grades of severity based on NCS and EMG findings. Mild CTS shows a prolonged distal latency of sensory median nerve studies across the wrist. Moderate CTS is defined by the addition of a prolonged median motor distal latency. Severe CTS is defined by prolonged median sensory or absent sensory or mixed nerve action potentials, and motor distal latencies with absent or decreased thenar compound muscle action potential. EMG changes may also be seen with CTS, and include fibrillations or other spontaneous activity, reduced recruitment, and motor unit potential changes.

**Rationale:**

Previous studies have reported the incidence of abnormalities of abductor pollicis brevis (APB) EMG examination in patients with CTS diagnosed by NCS. Current literature reports this incidence to be between 25% and 41%. These studies address the presence or absence of fibrillations, decreased recruitment, and abnormalities in motor unit action potential configuration in patients with CTS, but do not attempt to correlate CTS severity with specific finding of APB EMG.

**Proposal:**

This study will explore the correlation between NCS-graded severity of CTS and specific APB EMG changes.



**Subjects:**

**Study Population:**  
 All electrodiagnostic medicine consultation reports at the Physical Medicine Department of The Brody School of Medicine from 2002 to 2007.  
**Sample Selection:**  
 Chart review of the above study population will identify case reports demonstrating diagnosis of median neuropathy at or about the wrist.  
**Inclusion Criteria:**  
 Age older than 18 years  
 Diagnosis of median neuropathy at or about the wrist  
 Report of nerve conduction study data  
 Report of electromyography findings including abductor pollicis brevis  
**Exclusion Criteria:**  
 Past medical history of neuropathy  
 Past medical history of carpal tunnel release in the limb studied  
 Past medical history of radiculopathy in the limb studied

**Methods:**

Patient records will be assessed for eligibility for the study. NCS values will be collected and evaluated to determine CTS severity. This will be compared to the EMG findings and trends will be established.

**Outcome Measures:**

Correlations between NCS and EMG findings will be made.

**Analysis of Data:**

Data will be analyzed using SPSS software.

