EDITOR'S CHOICE

Diagnostic Testing Requested Before Surgical Evaluation for Carpal Tunnel Syndrome

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Purpose We sought to evaluate how often physicians who perform carpal tunnel release in the state of Michigan routinely request electrodiagnostic studies (EDS) or other diagnostic tests prior to an initial consultation and whether provider or practice characteristics had an influence on requirements for preconsultation diagnostic tests.

Methods Through online data sources, we identified 356 providers in 261 practices throughout the state of Michigan with profiles confirming hand surgery practice or surgical treatment of carpal tunnel syndrome (CTS). We recorded American Society for Surgery of the Hand (ASSH) membership, teaching facility status, practice size, and primary specialty for each provider. Using a standardized telephone script, 219 providers were contacted by telephone to determine whether any diagnostic tests were needed before an appointment. Using multivariable logistic regression, we evaluated the relationship between the requirement for preconsultation testing and surgeon and practice characteristics.

Results Among the 134 providers who were confirmed to perform carpal tunnel release, 57% (n = 76) required and 9% (n = 12) recommended a diagnostic test prior to the initial consultation. Of the 88 physicians who required/recommended testing, 85% (n = 75) requested EDS, 22% (n = 19) requested magnetic resonance imaging, 13% (n = 11) requested a computed tomography scan, and 9% (n = 8) requested an x-ray. Patients were asked to have multiple studies by 19 (22%) of the 88 surgeons who requested/recommended testing. In the multivariable analysis, ASSH membership, size of practice, and teaching facility status did not have a significant relationship with the requirement for preconsultation testing.

Conclusions Most surgeons who treat CTS in the state of Michigan routinely request EDS before evaluation, rather than reserving the test for cases in which the diagnosis is unclear.

Clinical relevance In the quest for high-value care, providers must consider whether the benefit of diagnostic tests for CTS likely outweighs the costs, inconvenience, and potential for treatment delay. *(J Hand Surg Am. 2017;■(■):■−■. Copyright © 2017 by the American Society for Surgery of the Hand. All rights reserved.)*

Key words Diagnostic tests, electrodiagnostic studies, carpal tunnel syndrome.

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Electrodiagnostic studies (EDS) are commonly used to evaluate patients with suspected carpal tunnel syndrome (CTS), with approximately 70% of American Society for Surgery of the Hand (ASSH) members reporting routine use of EDS prior to carpal tunnel release (CTR) in 2015.[1] However, there is no reference standard diagnostic test for CTS. Current evidence consistently reports that information gathered from the history and physical examination has similar if not better sensitivity and specificity for CTS diagnosis than modalities such as EDS, magnetic resonance imaging (MRI), and ultrasound (US), often with EDS having the highest false-positive and false-negative rates of the commonly used testing modalities.[2–7] Although EDS is not associated with a high risk of harm, it is an unpleasant experience for patients. Furthermore, EDS may provide little value in patients who have classic symptoms and examination findings consistent with CTS, given the delay in surgery and added costs seen in patients who have EDS prior to CTR.[8]

The 2016 American Academy of Orthopaedic Surgeons (AAOS) Clinical Practice Guidelines (CPG) on the Management of Carpal Tunnel Syndrome supports the use of either EDS or a diagnostic questionnaire to aid the diagnosis of CTS.[9] Although previous versions of the AAOS CPG recommended EDS for patients being considered for CTR,[10] this recommendation does not appear in the latest guideline. The impact of previous recommendations on the routine use of EDS in current clinical practice for patients with suspected CTS is unknown. Furthermore, it is unknown how often surgeons are using EDS or other diagnostic tests prior to an initial patient evaluation, rather than ordering the tests selectively based on information obtained in the history and physical examination.

We sought to evaluate how often physicians who perform CTR in the state of Michigan routinely request EDS and/or other diagnostic tests prior to an initial consultation. Secondarily, we aimed to determine whether provider or practice characteristics had an influence on requirements for preconsultation diagnostic tests. We hypothesized that EDS for CTS would be widely utilized before an initial consultation regardless of surgeon or practice factors.

MATERIALS AND METHODS

Dataset and study selection

This study received nonregulated status by the institutional review board. We identified surgeons who potentially perform CTR in the state of Michigan through online data sources. The ASSH members practicing in Michigan were identified using the ASSH membership directory.[11] Non-ASSH members were identified by using 2 online physician search engines, DocSpot[12] and HealthGrades.[13] The search engines were chosen to compile a sample of physicians who potentially perform CTR by using related search terms unique to each site. The terms "hand surgery," "carpal tunnel release," and "carpal tunnel" were chosen to identify prospective providers on DocSpot and the terms "orthopaedic hand surgery," "plastic surgery of the hand," and "neuroplasty (limited to neurosurgeons)" were chosen to identify prospective providers on HealthGrades. We recorded publicly available data from the physician profiles and verified each element on the physician's personal Web site when available, including the physician name, practice name, address, phone number for appointment scheduling, teaching facility status, size of the practice (the number of surgeons in the same practice performing CTR), and primary specialty (plastic surgery, orthopedic surgery, neurosurgery, or general surgery). Providers were excluded if their profile or personal Web page did not indicate that they performed CTR or hand surgery. We identified 356 providers in 261 practices who met the inclusion criteria (Fig. 1).

We categorized practices as solo (n = 176), 2-provider (n = 43 practices), or group practices (3+ providers; n = 42 practices). We included all the identified group practices (n = 42 practices) to allow evaluation of within-group practice variation. Furthermore, 58 solo or 2-provider practices were randomly sampled to provide a total of 100 practices for inclusion (Fig. 1). The sample size had sufficient power to detect differences in proportions of at least 25% between 2 groups for the outcome of recommending or requesting any diagnostic test, with power (beta) of 0.8 and alpha of 0.05. Using a standardized telephone script (Appendix A; available on the *Journal*'s Web site at www.jhandsurg.org), 3 trained research assistants (Y.L., S.M.W., J.S.N.) contacted the office staff of providers who practiced in 1 of the 100 selected practices by telephone between June 28 and July 15, 2016. The assistants posed as a patient who was seeking to be seen for surgical evaluation for CTS and first verified that the physician/practice information was correct and that the provider performed CTR. The assistants asked whether any diagnostic tests were needed before an appointment with the provider and recorded the specific tests that were requested or recommended. Physicians who did not perform CTR (n = 30) or