

Work-Related Neurogenic Thoracic Outlet Syndrome

Diagnosis and Treatment



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KEYWORDS

- Diagnosis • Practice guidelines • Thoracic outlet syndrome • Treatment
- Workers' compensation

KEY POINTS

- The diagnosis and treatment of neurogenic thoracic outlet syndrome (NTOS) are highly controversial and associated with surgical interventions based on no clear-cut evidence of presence of true thoracic outlet syndrome (TOS).
- Considering the poor outcomes reported from the surgical management of NTOS in most workers' compensation cases, this guideline requires objective evidence of brachial plexus disorder, including abnormal electrodiagnostic tests.
- In workers' compensation, a majority of patients have poor outcomes of surgery for NTOS 1 year after surgery.
- Approximately 20% of patients may have new adverse outcomes, primarily related to new neurologic complaints or lung pathology, the most serious of which is phrenic nerve dysfunction.

INTRODUCTION

This guideline is to be used by physicians, claim managers, occupational nurses, and utilization review staff. The emphasis is on accurate diagnosis and treatment that are curative or rehabilitative (see <http://app.leg.wa.gov/WAC/default.aspx?cite=296-20-01002> for definitions). An electrodiagnostic worksheet and guideline summary are appended to the end of this document.

This guideline was developed in 2010 by the Washington State Industrial Insurance Medical Advisory Committee (IIMAC) and its subcommittee on Upper Extremity Entrapment Neuropathies. The subcommittee presented its work to the full IIMAC, and the IIMAC voted with full consensus advising the Washington State Department of Labor and Industries to adopt the guideline. This guideline was based on the weight of the best available clinical and scientific evidence from a systematic review of the literature

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(evidence was classified using criteria defined by the American Academy of Neurology)¹ and a consensus of expert opinion. One of IIMAC's primary goals is to provide standards that ensure high quality of care for injured workers in Washington State.

TOS is characterized by pain, paresthesias, and weakness in the upper extremity, which may be exacerbated by elevation of the arms or by exaggerated movements of the head and neck. There are 3 categories of thoracic outlet syndrome: arterial, venous, and neurogenic. Arterial and venous thoracic outlet syndromes involve obstruction of the subclavian artery or vein, respectively, as they pass through the thoracic outlet. These vascular categories of TOS should include obvious clinical signs of vascular insufficiency: a cold, pale extremity in cases of arterial TOS, or a swollen, cyanotic extremity in cases of venous TOS. There is a separate surgical guideline for vascular TOS. This guideline focuses solely on nonacute NTOS.

Work-related NTOS occurs due to compression of the brachial plexus, predominantly affecting its lower trunk, at 1 of 3 potential sites. Compression can occur between the anterior scalene muscle (ASM) and middle scalene muscle (or sometimes through the ASM); beneath the clavicle in the costoclavicular space; or beneath the tendon of the pectoralis minor.²

The medical literature describes 2 categories of NTOS: true NTOS and disputed NTOS. A diagnosis of true NTOS requires electrodiagnostic study (EDS) abnormalities showing evidence of brachial plexus injury (discussed later). Disputed NTOS describes cases of NTOS for which EDS abnormalities have not been demonstrated. To avoid confusion that has arisen over these categories, this guideline does not use such terms. Rather, it provides guidance regarding treatment of cases of NTOS that have been confirmed by EDS abnormalities compared with those cases for which the provisional diagnosis has not been confirmed by such studies.

In general, work-relatedness and appropriate symptoms and objective signs must be present for the Washington State Department of Labor and Industries to accept NTOS on a claim. EDSs, including nerve conduction velocity studies and needle electromyography (EMG), should be scheduled immediately to confirm the clinical diagnosis. If time loss extends beyond 2 weeks or if surgery is requested, completion of EDSs is required and does not need prior authorization.

ESTABLISHING WORK-RELATEDNESS

Work-related activities may cause or contribute to the development of NTOS.^{3,4} Because simply identifying an association with workplace activities is not, in itself, adequate evidence of a causal relationship, establishing work-relatedness requires all of the following:

1. Exposure: workplace activities that contribute to or cause NTOS
2. Outcome: a diagnosis of NTOS that meets the diagnostic criteria (discussed later)
3. Relationship: generally accepted scientific evidence, which establishes on a more probable than not basis (greater than 50%) that the workplace activities (exposure) in an individual case contributed to the development or worsening of the condition (outcome)

When the Washington State Department of Labor and Industries receives notification of an occupational disease, an occupational disease and employment history form is mailed to the worker, employer, or attending provider. The form should be completed and returned to the insurer as soon as possible. If a worker's attending provider completes the form, provides a detailed history in the chart note, and gives an opinion on causality, the provider may be paid for this (use billing code 1055M).

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