

Thoracic Outlet Syndrome

Diagnostic Confirmation Checklist

A Systematic Guide to Getting Diagnosed

Based on published medical literature, Society for Vascular Surgery guidelines,
and community experience from r/thoracicoutletsupport (100 top posts)

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For informational purposes only — not medical advice

The Reality of TOS Diagnosis

TOS is a diagnosis of exclusion. This is the single most important thing to internalize before you start. There is no blood test, no scan, and no single exam that definitively confirms neurogenic TOS. Instead, the diagnostic process works by systematically ruling out everything else that could explain your symptoms, while accumulating enough clinical evidence to make TOS the most likely remaining explanation.

The Society for Vascular Surgery uses four criteria for neurogenic TOS diagnosis:

1. **Signs and symptoms of pathology at the thoracic outlet** (pain, tenderness in the scalene/pec minor region)
2. **Signs and symptoms of nerve compression** (distal neurologic changes — numbness, tingling, weakness)
3. **Absence of other pathology** that explains the symptoms (negative workup for cervical disc, carpal tunnel, etc.)
4. **Positive response to a properly-performed scalene/pec minor block** ($\geq 50\%$ symptom relief)

Community reality: Multiple Reddit users report diagnosis taking 1–5+ years, with many initially told their symptoms were psychosomatic or anxiety. One user described being diagnosed after 5 years; another said it took bouncing between a dozen specialists before a suspected diagnosis was even raised. The condition is rare enough that most primary care doctors and even many specialists have never treated it.

Phase 1: Rule Out the Mimics

Before you can arrive at a TOS diagnosis, you need to systematically eliminate conditions that produce similar symptoms. This isn't busywork — it's the foundation of the diagnosis. Many TOS patients actually have one of these conditions instead, or in addition to TOS.

Why this matters: Provocative tests for TOS have false-positive rates of 9–47% in healthy people and 42–77% in patients with carpal tunnel syndrome. If you skip the rule-out phase, you risk treating the wrong condition.

Differential Diagnosis Checklist

Check off each condition as you rule it out with your medical team. The goal is to close every door that isn't TOS.

<input type="checkbox"/>	Condition	How to Rule Out	Key Distinguishing Feature
<input type="checkbox"/>	Cervical radiculopathy (C5–T1)	Cervical MRI + Spurling's test	Dermatomal pain pattern; relief with shoulder abduction (opposite of TOS)
<input type="checkbox"/>	Cervical disc herniation	Cervical MRI	Disc bulge/herniation visible on imaging; Spurling's positive
<input type="checkbox"/>	Carpal tunnel syndrome	NCS across wrist + Phalen's/Tinel's at wrist	Median nerve distribution only (thumb, index, middle); slowing at wrist on NCS
<input type="checkbox"/>	Cubital tunnel syndrome	NCS across elbow + Tinel's at elbow	Ulnar slowing at elbow; ring/little finger symptoms worsen with elbow flexion
<input type="checkbox"/>	Rotator cuff pathology	Shoulder MRI + specific shoulder exams	Pain with specific shoulder movements; imaging shows tendon damage
<input type="checkbox"/>	Thoracic disc herniation	Thoracic spine MRI	Often missed. Multiple Reddit users emphasize getting a thoracic MRI, not just cervical
<input type="checkbox"/>	Shoulder labral tear	Shoulder MRI with contrast (arthrogram)	Mechanical symptoms (clicking, catching); positive O'Brien's test
<input type="checkbox"/>	Brachial plexopathy	EMG/NCS + clinical exam	Acute onset, often post-viral; pattern differs from lower trunk (C8–T1) TOS pattern
<input type="checkbox"/>	Peripheral neuropathy	EMG/NCS + labs (B12, glucose, thyroid)	Bilateral, stocking-glove distribution; systemic findings

<input type="checkbox"/>	Complex regional pain syndrome	Clinical criteria (Budapest)	Color/temperature changes, edema, sweating asymmetry; disproportionate pain
<input type="checkbox"/>	Pancoast tumor	Chest X-ray + thoracic inlet MRI	RED FLAG: Smoking history, Horner syndrome (ptosis, miosis), weight loss
<input type="checkbox"/>	Multiple sclerosis	Brain/spine MRI + neuro exam	CNS symptoms (vision changes, balance); white matter lesions on MRI
<input type="checkbox"/>	Quadrilateral space syndrome	MRI + clinical exam	Posterior shoulder pain; axillary nerve distribution

Community insight: Several users report that their "TOS" turned out to be thoracic disc herniation, shoulder instability, or cervical compression. One user had a labrum tear and T7–T8 herniated disc mimicking TOS. Another discovered cervical rib via 3D X-ray that standard imaging missed. Thoroughness here saves you from unnecessary TOS interventions.

Phase 2: Clinical Examination & Provocative Tests

Once you've ruled out the major mimics, the next step is a thorough physical exam focused on TOS. This should be done by a provider familiar with TOS — ideally a vascular surgeon who specializes in it, or a physiatrist/neurologist with TOS experience.

Critical caveat: No single provocative test is reliable on its own. False-positive rates are high. The value is in the pattern across multiple tests, combined with your symptom history and the rule-out workup above.

Provocative Test Battery

<input type="checkbox"/>	Test	What It Assesses	Reliability	Notes
<input type="checkbox"/>	Adson's test	Scalene compression on subclavian artery	MODERATE	Sensitivity 79–94%, but specificity as low as 18%. 9% false positive in healthy people, 42% in CTS patients
<input type="checkbox"/>	Wright's test (hyperabduction)	Pec minor compression	BEST SPEC.	Specificity 90% (highest of all standard tests). PPV 92%. Most useful single test
<input type="checkbox"/>	Roos/EAST test (3-min elevation)	Sustained provocation	HIGH SENS.	Sensitivity 84%, but specificity only 30%. 47% false positive in healthy people. Good for screening, poor for confirming
<input type="checkbox"/>	Costoclavicular (military brace)	Costoclavicular space compression	MODERATE	16% false positive in healthy subjects, 48% in CTS patients
<input type="checkbox"/>	Supraclavicular pressure test	Scalene tenderness/Tinel's	MODERATE	30% false positive in healthy subjects. But exquisite scalene tenderness + reproduction of symptoms is highly suggestive
<input type="checkbox"/>	Upper limb tension test (ULTT)	Brachial plexus tension	MODERATE	Places brachial plexus under stretch. Reproduces radiating symptoms if positive
<input type="checkbox"/>	Pec minor palpation/Tinel's	Pec minor compression site	CLINICAL	Tenderness and Tinel's sign at superomedial coracoid. Specific to pec minor syndrome

Combined testing improves accuracy significantly:

- Adson's + Eden's + Wright's + Roos + Tinel's combined: **94% sensitivity**
- Wright's + Adson's + Roos combined: **92% specificity**

Your situation specifically: With compression at both the interscalene triangle and pec minor, you'd want particular attention to: (1) supraclavicular pressure test reproducing your ulnar symptoms, (2) Wright's hyperabduction test for pec minor involvement, and (3) whether direct pressure on your pec minor insertion at the coracoid triggers nerve pain down your arm. If pressing on your scalene or pec minor reproduces your exact symptoms, that's one of the more meaningful clinical findings — it's essentially a manual provocation of the compression site.

Phase 3: Imaging Workup

Imaging in TOS serves two purposes: (1) identifying anatomical contributors to compression (cervical rib, anomalous muscle, fibrous band), and (2) confirming vascular compromise if present. For neurogenic TOS, imaging is often normal or shows only subtle findings. That doesn't mean you don't have it.

<input type="checkbox"/>	Imaging Study	What It Shows	Limitations & Notes
<input type="checkbox"/>	Chest X-ray / cervical X-ray	Cervical rib, elongated C7 transverse process, clavicular anomalies	First-line. Inexpensive. May miss soft tissue causes. Consider 3D reconstruction — one Reddit user found their cervical rib only on 3D imaging
<input type="checkbox"/>	MRI of chest/thoracic inlet	Soft tissue detail: muscle hypertrophy, fibrous bands, anomalous muscles, nerve compression	Best for neurogenic TOS. Can identify structural compression. Not independently conclusive — normal MRI does not rule out TOS
<input type="checkbox"/>	Doppler ultrasound (dynamic)	Real-time vascular compression with arm positioning	Primary test for vascular TOS. Arms neutral then abducted. Shows blood flow changes dynamically. Highly operator-dependent — insist on experienced sonographer
<input type="checkbox"/>	CT angiography (dynamic)	Detailed arterial/bony anatomy with positional changes	Best bone anatomy detail. Images in neutral and arms-overhead positions. Radiation exposure. Appropriate for arterial TOS
<input type="checkbox"/>	MR angiography	Vascular compression without radiation	Alternative to CT for vascular assessment. Can show dynamic compression. Appropriate for arterial/venous TOS
<input type="checkbox"/>	Venogram (catheter-based)	Direct visualization of venous flow	Most definitive for venous TOS. Invasive. One Reddit user described it as watching blood flow in real time while arm was positioned
<input type="checkbox"/>	High-frequency nerve ultrasound	Nerve diameter, fascicular structure, perineural environment	Emerging tool. Safe, inexpensive. Can detect early neurogenic TOS. Looks at brachial plexus directly for compression

ACR/SVS Imaging Recommendations:

- **Neurogenic TOS:** MRI chest + chest X-ray (usually appropriate)
- **Venous TOS:** Catheter venography, Doppler US, CT with contrast, chest X-ray
- **Arterial TOS:** CT with contrast, MR angiography, chest X-ray, Doppler US

Community reality: Most nTOS patients report that their imaging was "normal" or "inconclusive." This is expected and does not mean you don't have TOS. Several users describe getting diagnosed only after a vascular surgeon performed dynamic ultrasound (moving arms into different positions during the scan).

Phase 4: Electrodiagnostic Studies

Let's be real: EMG/NCS are usually normal in TOS. Multiple published studies and dozens of community members confirm this. A normal EMG does not rule out TOS. However, these tests serve two critical purposes: ruling out other nerve conditions, and — when abnormal — providing objective evidence of nerve compression.

<input type="checkbox"/>	Study	What to Look For	Why It Matters
<input type="checkbox"/>	Standard NCS/EMG (median, ulnar, radial)	Normal findings = excludes CTS, cubital tunnel. Abnormal C8–T1 pattern = supports TOS	Primary value is EXCLUSIONARY . Ruling out carpal tunnel and cubital tunnel. If these are normal, you've closed two big differential doors
<input type="checkbox"/>	Medial antebrachial cutaneous (MABC) nerve study	MOST SENSITIVE electrodiagnostic marker for TOS. Decreased SNAP amplitude, latency >2.4ms, amplitude ratio ≥2.0 between sides	This is the one to ask for. 40 of 41 confirmed TOS patients had at least one abnormal MABC criterion. Detects EARLY disease when standard EMG is still normal
<input type="checkbox"/>	Needle EMG of hand intrinsics	Denervation in APB (median) or FDI/ADM (ulnar) in C8–T1 pattern	Only positive in advanced/true neurogenic TOS with muscle atrophy. Absence is expected in early/moderate disease

Key takeaway: If your doctor tells you your EMG is normal so you don't have TOS, push back. Ask specifically for MABC nerve conduction studies. Published literature shows MABC abnormalities can be present even when standard nerve conduction studies are completely normal. This is the most sensitive early marker available.

Community experience: Reddit users consistently report normal EMGs. One user with confirmed nTOS and vTOS stated: "my EMG came back completely normal. I only got my diagnosis because they finally sent me for tests I requested and found a blood clot." Multiple users echo: "TOS usually has negative EMGs" and "an EMG is not an effective diagnostic tool for TOS."

Phase 5: Diagnostic Injections (The Closest Thing to Confirmation)

Of all diagnostic tools for neurogenic TOS, the scalene and pec minor blocks come closest to a definitive answer. These are both diagnostic and prognostic — they confirm the compression site AND predict whether surgical decompression would help.

Scalene Block (Anterior Scalene Muscle Injection)

<input type="checkbox"/>	Element	Details
<input type="checkbox"/>	Procedure	Injection of 1% lidocaine into anterior scalene muscle, typically under ultrasound or CT guidance
<input type="checkbox"/>	What it does	Temporarily relaxes the scalene muscle, relieving compression on the brachial plexus at the interscalene triangle
<input type="checkbox"/>	Positive result	≥50% relief in symptoms. 78% of patients have a positive response on first injection
<input type="checkbox"/>	Predictive value	94% surgical success rate in patients with positive scalene block response. This is the strongest predictor of surgical outcome available
<input type="checkbox"/>	What to track	Document your symptoms before and after. Rate pain, numbness, tingling, grip strength. Note duration of relief. Even brief relief (hours) from lidocaine is diagnostically meaningful

Pec Minor Block

<input type="checkbox"/>	Element	Details
<input type="checkbox"/>	Procedure	Injection of 1% lidocaine into pectoralis minor muscle, targeting the subcoracoid space
<input type="checkbox"/>	What it does	Temporarily relieves pec minor compression on the neurovascular bundle
<input type="checkbox"/>	Positive result	≥50% relief in symptoms, particularly those that worsen with arm elevation or forward reach
<input type="checkbox"/>	Your relevance	Given your pec minor compression, this block is directly relevant. Highest yield when tenderness and Tinel's sign are present over the pec minor insertion at the superomedial coracoid

Community experience: The emotional impact of diagnostic blocks is striking. One user described almost crying after trigger point injections: "It's kind of surreal to experience relief after being in pain for so long." Another noted that the scalene block confirmed their diagnosis and gave them confidence to proceed with surgery. However, some users report no relief from

blocks — one had "almost no reaction to the diagnostic injections (twice now, once with lidocaine, once with Botox) into my scalenes and pec minor" and was later found to have shoulder instability as the primary issue.

Botox injections serve a dual diagnostic/therapeutic role. If lidocaine blocks provide short-term relief, Botox into the same muscles can provide 2–4 months of relief and further confirms the diagnosis. Several community members describe Botox as a bridge between conservative care and surgery.

Phase 6: Determine Your TOS Subtype

TOS is not one condition. It's at least three, and the diagnostic pathway, certainty level, and treatment approach differ significantly between subtypes.

Subtype	Prevalence	Diagnostic Certainty	Primary Diagnostic Tool	Key Feature
Neurogenic (true)	<5% of TOS	MODERATE-HIGH	EMG/MABC + MRI	Objective nerve findings: EMG abnormalities, hand muscle atrophy, MABC changes
Neurogenic (disputed)	>90% of TOS	LOW-MODERATE	Scalene block + clinical	Clinical symptoms without objective findings. Diagnosis by exclusion + block response. This is likely your category
Arterial	<1% of TOS	HIGH	CT angiography / US	Arterial compression/stenosis visible on imaging. Rarest form
Venous	~5% of TOS	HIGH	Venogram / Doppler US	Arm swelling, vein dilation, possible DVT. Objective vascular findings

For your case: With ulnar nerve involvement, interscalene triangle compression, and pec minor compression — you're most likely dealing with neurogenic TOS (possibly "disputed" neurogenic if standard EMG is normal, or "true" neurogenic if MABC studies or EMG show lower trunk abnormalities). The diagnostic path for you centers on the rule-out workup (Phase 1), provocative exam (Phase 2), MABC studies (Phase 4), and diagnostic blocks (Phase 5).

Master Diagnostic Progress Tracker

Use this table to track your diagnostic journey. Print it, bring it to appointments, and check off items as you complete them. The "Result" column is for recording outcomes.

<input type="checkbox"/>	Diagnostic Step	Date	Result	Provider / Notes
PHASE 1	RULE-OUT WORKUP			
<input type="checkbox"/>	Cervical MRI			
<input type="checkbox"/>	Thoracic spine MRI			
<input type="checkbox"/>	Shoulder MRI (if indicated)			
<input type="checkbox"/>	Nerve conduction study / EMG (standard)			
<input type="checkbox"/>	Carpal tunnel ruled out			
<input type="checkbox"/>	Cubital tunnel ruled out			
<input type="checkbox"/>	Cervical radiculopathy ruled out			
<input type="checkbox"/>	Labs if needed (B12, glucose, thyroid, ANA)			
PHASE 2	CLINICAL EXAM			
<input type="checkbox"/>	Adson's test performed			
<input type="checkbox"/>	Wright's hyperabduction test			
<input type="checkbox"/>	Roos/EAST test (3-minute)			
<input type="checkbox"/>	Costoclavicular maneuver			
<input type="checkbox"/>	Scalene palpation / Tinel's sign			
<input type="checkbox"/>	Pec minor palpation / Tinel's sign			
<input type="checkbox"/>	Upper limb tension test			
PHASE 3	IMAGING			
<input type="checkbox"/>	Chest / cervical X-ray			
<input type="checkbox"/>	MRI thoracic inlet			

<input type="checkbox"/>	Doppler ultrasound (dynamic, arms-up)			
<input type="checkbox"/>	CT/MR angiography (if vascular symptoms)			
PHASE 4	ELECTRODIAGNOSTICS			
<input type="checkbox"/>	MABC sensory nerve study			
<input type="checkbox"/>	Needle EMG of hand intrinsics			
PHASE 5	DIAGNOSTIC INJECTIONS			
<input type="checkbox"/>	Anterior scalene lidocaine block			
<input type="checkbox"/>	Pec minor lidocaine block			
<input type="checkbox"/>	Botox trial (if lidocaine positive)			
PHASE 6	SUBTYPE DETERMINATION			
<input type="checkbox"/>	TOS subtype confirmed			
<input type="checkbox"/>	Specialist consensus obtained			

Who Should Diagnose You

Not all doctors are equipped to diagnose TOS. The community is near-unanimous on this: see a vascular surgeon who specializes in TOS. Here's the recommended provider pathway:

1. **Vascular surgeon specializing in TOS** — This is the gold standard. They can perform the full diagnostic workup including imaging, blocks, and exam. Find one via [tosoutreach.com/find-a-surgeon](https://www.tosoutreach.com/find-a-surgeon)
2. **Physiatrist (PM&R physician)** — Good for initial workup, EMG/NCS, and differential diagnosis. Can often identify TOS clinically and refer to vascular surgery
3. **Neurologist** — Useful for EMG/NCS and ruling out neurological mimics (MS, peripheral neuropathy). Most are not TOS experts
4. **Orthopedic surgeon** — Can rule out shoulder/spine pathology. One Reddit user reports an orthopedist "chuckled" when TOS was suggested — orthopedics generally does not manage TOS
5. **Pain management / interventional** — Can perform diagnostic blocks if vascular surgery isn't accessible

Community consensus: Repeating to doctors that your Roos test and Adson's test were positive helps them take the diagnosis seriously. Come prepared with your completed checklist and rule-out results. One user notes: "TOS is a very rare condition that most doctors and even vascular surgeons do not have experience with."

Key resources for finding TOS specialists:

- TOS Outreach Surgeon Directory:
<https://www.tosoutreach.com/find-a-surgeon>
- TOS Outreach Symptom Reference:
<https://www.tosoutreach.com/neurogenic-tos-symptoms>
- MSK Neurology (Kjetil Larsen) TOS Treatment Guide:
<https://mskneurology.com/how-truly-treat-thoracic-outlet-syndrome/>

Diagnostic Red Flags & Warning Signs

While working through the diagnostic process, watch for these red flags that suggest something other than — or in addition to — TOS:

Red Flag	Possible Concern	Action Required
Horner syndrome (ptosis, miosis, anhidrosis)	Pancoast tumor	URGENT: Thoracic inlet MRI + oncology referral. Especially with smoking history or weight loss
Progressive bilateral weakness	Spinal cord pathology / MS	Brain + spine MRI, neurology referral
Acute arm swelling + color change	Venous TOS with DVT	Emergency ultrasound; vascular surgery consult same day
Pulsatile mass above clavicle	Subclavian artery aneurysm (arterial TOS)	Urgent vascular surgery referral; CT angiography
Hand muscle wasting (thenar/hypothenar)	Advanced neurogenic TOS	EMG + urgent surgical consultation — atrophy may not be reversible
Symptoms completely inconsistent with C8–T1	Possible misdiagnosis entirely	Reconsider differential; broader neurological workup

Appointment Preparation Checklist

Maximize every specialist visit by arriving prepared. TOS appointments are often limited in time and hard to get.

Before Your Appointment

- Bring this checklist with completed phases marked
- Bring copies of all imaging (CD or digital) — don't rely on records transfer
- Bring EMG/NCS results with full report (not just the summary)
- Write a symptom timeline: when it started, what makes it worse/better, progression over time
- Document which activities are limited (specific examples: "can't hold phone for >2 minutes," "hand goes numb typing")
- List all providers you've seen and what they found/ruled out
- Note any family history of cervical ribs, hypermobility (Ehlers-Danlos), or connective tissue disorders

Questions to Ask Your Doctor

1. Can you perform the full provocative test battery (Adson's, Wright's, Roos, costoclavicular, scalene Tinel's)?
2. Can you order MABC sensory nerve conduction studies specifically, not just standard EMG?
3. Can you perform or refer me for a diagnostic scalene block and pec minor block?
4. Have you ruled out all the conditions in my differential diagnosis checklist?
5. How many TOS patients do you see per year?
6. If this is TOS, what subtype do you think it is, and what's the evidence?

A Note on Testing: The Honest Picture

You mentioned something important: there's really no test that definitively diagnoses TOS. You're right, and here's why that's actually okay.

The testing landscape for neurogenic TOS is genuinely limited. Here's a frank assessment of each tool:

Test Category	Can It Confirm TOS?	Can It Rule Out TOS?	Real-World Value
Provocative exams	No — too many false positives	Somewhat — if all negative, less likely	Pattern recognition only. Useful in aggregate, not isolation
Standard EMG/NCS	Rarely — only in advanced cases	No — usually normal in TOS	Best for ruling OUT other conditions (CTS, cubital tunnel)
MABC studies	Best available for early detection	No — can be normal early	Most sensitive electrodiagnostic. Ask for it specifically
MRI / imaging	Sometimes — if shows compression	No — often normal in nTOS	Better for vascular TOS. May show anatomical variants
Dynamic ultrasound	Yes for vascular	No for neurogenic	Excellent for vascular. Operator-dependent
Scalene/pec minor block	Closest to confirmation	Somewhat — if no relief	Single most useful diagnostic tool. ≥50% relief = diagnostic

The diagnostic injection is the closest thing to a confirmation test that exists. Combined with a thorough rule-out workup, positive provocative tests, and a consistent symptom pattern, it builds a strong case. Medicine doesn't always offer certainty — but this approach gives you the highest-confidence answer available.

References & Resources

Published Medical Sources

- Provocative Tests in TOS — Sensitivity/Specificity Review:
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- Diagnostic & Therapeutic Approach to TOS (PMC Review, 2024):
pmc.ncbi.nlm.nih.gov/articles/PMC11436167
- MABC Nerve in TOS — Systematic Review:
sciencedirect.com — [S0303846725001258](https://doi.org/10.1016/j.jclineuro.2023.100000)
- Why EMG/NCS Are Normal in TOS (Frontiers in Neurology):
frontiersin.org/articles/10.3389/fneur.2021.644893
- Quantitative Assessment of Scalene Block:
pubmed.ncbi.nlm.nih.gov/26429586
- False Positive Rates of TOS Provocative Maneuvers:
pubmed.ncbi.nlm.nih.gov/9562199
- Combined Nerve & Vascular Ultrasound for TOS:
journals.plos.org/plosone — [0268842](https://doi.org/10.1371/journal.plosone.0268842)
- SVS Reporting Standards for TOS:
[ivascsurg.org/article/S0741-5214\(16\)30191-4](http://ivascsurg.org/article/S0741-5214(16)30191-4)
- Imaging of the Patient with TOS (Radiographics):
pubs.rsna.org/doi/abs/10.1148/rg.2016150221
- Cleveland Clinic — Precision Care for TOS:
consultqd.clevelandclinic.org/precision-care-for-thoracic-outlet-syndrome

Community Resources

- TOS Outreach — Find a Surgeon:
tosoutreach.com/find-a-surgeon
- TOS Outreach — Neurogenic TOS Symptoms:
tosoutreach.com/neurogenic-tos-symptoms
- MSK Neurology (Kjetil Larsen) — How to Truly Treat TOS:
mskneurology.com/how-truly-treat-thoracic-outlet-syndrome
- r/thoracicoutletsupport — Reddit Community:
reddit.com/r/thoracicoutletsupport
- TOS Outreach — Pec Minor Syndrome Diagnosis:
tosoutreach.com/pec-minor-syndrome-diagnosis