NEUROMYOFASCIAL SCIENCE · DR. LAMB

What if your jaw pain, ringing ears, and *vision changes* all share one hidden root?

A new framework connecting TMJ, Tinnitus, and Retinal OCT findings through cervical spine pathology

30 Years of Clinical Observation · Supported by Peer-Reviewed Research

THE SCALE OF THE PROBLEM

50M+

people in North America living with chronic tinnitus — most without an explanation

2.62×

increased risk of tinnitus following a TMJ disorder diagnosis

Lee et al., 2016 · Eur Arch Otorhinolaryngol · 47,349-participant meta-analysis, Alghamdi et al. 2026

10%

of whiplash patients develop tinnitus, vertigo, or hearing loss

Tranter & Graham, 2009 · J Forensic & Legal Medicine

SECTION ONE

The Conventional View Has Left Millions Without Answers

TMJ is treated as a jaw problem. Tinnitus is treated as an ear problem. Yet for many patients, these treatments offer only partial or no relief.

Two Models of the Same Symptoms

CONVENTIONAL MODEL

Each symptom treated in isolation

- TMJ = a jaw joint disorder
- Tinnitus = an auditory / inner-ear disorder
- Headache = a neurological disorder
- Vision changes = an ophthalmological finding

NEUROMYOFASCIAL MODEL

A common spinal root connects the symptoms

- Cervical & thoracic neuromyofascial injury
- Referred dystonia of masticatory muscles → TMJ
- Somatosensory pathways → tinnitus
- Neuroaxonal stress → retinal thinning on OCT

DR. LAMB · LAMB PAIN CLINIC

> *"TMJ dysfunction may be the tip of the iceberg of a more complex neurological or whiplash-related disorder affecting the neck and upper back."*

— Neuromyofascial Science, 30 years of clinical observation

30
years of clinical observation

3
interconnected conditions

1
underlying spinal root

SECTION TWO

TMJ: Rethinking Jaw Dysfunction

Jaw pain, clicking, and malocclusion are real — but for many patients, the origin lies far from the jaw itself.

HOW SPINAL INJURY DRIVES FACIAL SYMPTOMS

The Neuromyofascial Cascade

Whiplash or Cumulative Trauma

Acceleration-deceleration or repeated injury

→

Cervical & Thoracic NMF Pathology

Neuromyofascial injury accumulates at spinal levels

→

Entrapment Syndromes: Scalenes, SCM

Lateral neck muscles also implicated

→

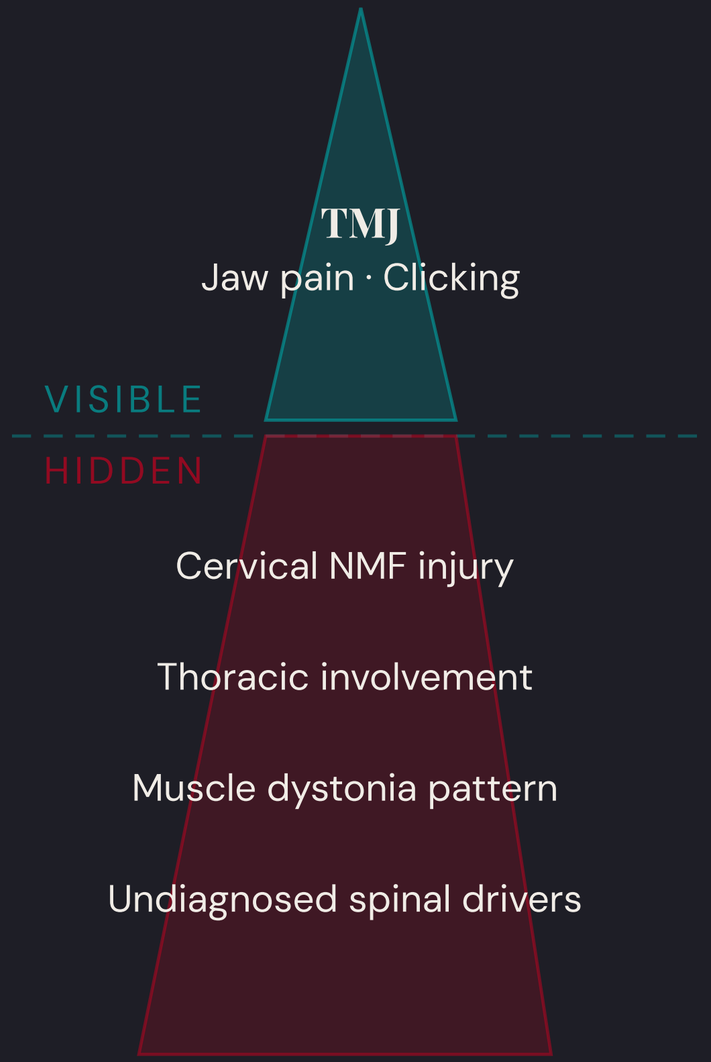
Dystonia of Masticatory Muscles

Temporalis, masseter, pterygoids in chronic spasm

→

TMJ Degeneration, Subluxation & Malocclusion

Altered jaw positioning & joint damage



CLINICAL INSIGHT

The jaw is where you feel it. The spine is where it starts.

WHAT YOU SEE

Clicking jaw, facial pain, difficulty chewing, malocclusion — often severe chronic spasticity palpable in temporalis and masseter

WHAT'S DRIVING IT

Cervical and/or thoracic neuromyofascial pathology creating referred dystonia in the muscles of mastication

Neuromodulators provide relief — but treating the cervical and thoracic drivers addresses the root cause.
— Lamb Pain Clinic, 30-year clinical observation

SECTION THREE

Tinnitus: Not Just a Ringing in the Ears

Internally generated sound — no external source. The cause remains incompletely understood in conventional medicine. Neuromyofascial Science offers a new lens.

THE NEUROMYOFASCIAL INTERPRETATION

Tinnitus as a Referred Craniofacial Neuropathic Disorder

PRESENTATION

High-pitched ringing, humming, cricket-like sounds, pulsing, or heartbeat sensation in one or both ears

NMF INTERPRETATION

A subtype of migraine-like or referred craniofacial neuropathic phenomenon arising from *cervical and thoracic spinal pathology*

SEEN ALONGSIDE

Post-concussion syndrome, migraine, TMJ dysfunction, whiplash-associated disorders, MS, fibromyalgia

Expert consensus criteria for somatosensory tinnitus now exist — identifying neck/jaw symptom timing and posture-related modulation as diagnostic markers. Michiels et al., 2018 · Trends in Hearing

PEER-REVIEWED EVIDENCE

The TMD–Tinnitus Link: What the Research Shows

STUDY	DESIGN	KEY FINDING	STRENGTH
Alghamdi et al., 2026 BMC Oral Health	Systematic Review & Meta-analysis 34 studies · 47,349 participants	Consistent association between TMD and tinnitus across all observational studies	Strong
Lee et al., 2016 Eur Arch Otorhinolaryngol	Population-based cohort Taiwan NHI registry	Adjusted hazard ratio **2.62** for tinnitus after TMD diagnosis — highest risk in first 3 years	Strong
Skog et al., 2019 J Oral Rehabilitation	Systematic Review 22 papers, 8 meta-analyzed	Frequent tinnitus comorbidity in TMD; some improvement after conservative TMD treatment	Moderate

PEER-REVIEWED EVIDENCE

Cervical Spine & Somatosensory Tinnitus

STUDY	DESIGN	KEY FINDING	STRENGTH
Michiels et al., 2018 Trends in Hearing	International Delphi Consensus	Established diagnostic criteria for somatosensory tinnitus — somatic modulation, neck/jaw symptoms, and posture-related change as key identifiers	Foundational
Bökel et al., 2025 J Clinical Medicine	Pilot Randomized Controlled Trial	Manual therapy targeting the cervical spine improved cervical pain, range of motion, tinnitus, and dizziness outcomes in somatosensory tinnitus patients	Moderate
Michiels et al., 2024 J Clinical Medicine	Pilot RCT · 38 adults	9-week app-based cervical exercise program produced significant reductions in tinnitus distress versus control	Moderate

Migraine independently associated with tinnitus — Goshtasbi et al., 2021 · NHANES (Otol Neurotol)

Teixeira et al., 2022 · Int J Audiol — systematic review of 26,166 participants supports migraine–tinnitus association

SECTION FOUR

Optical Coherence Tomography: A Window into Neurological Damage

Retinal nerve fiber layer thinning may be far more than an eye finding. It may be a signal of widespread neuroaxonal injury — beginning at the cervical spine.

OCT RESEARCH ACROSS OVERLAPPING DISORDERS

Retinal Thinning: From MS to Migraine to TMD

MULTIPLE SCLEROSIS

pRNFL & GCIPL thinning — established CNS biomarker

Correlates with disability & cognition; now in consensus clinical use.

Tewarie et al., 2023 & 2025 · MS OCT consensus

MIGRAINE

Subtle pRNFL thinning — strongest with aura

Meta-analytic data support retinal changes, especially in migraine with visual aura.

Wang et al., 2021 · Neurol Sci · meta-analysis

TBI / CONCUSSION

OCT promising — literature heterogeneous

Post-concussive auditory dysfunction is real; OCT may track neuroaxonal injury.

Fuller et al., 2017 · Le et al., 2024 · Brain Injury

TMD / BRUXISM

RNFL, GCL, IPL & choroid differences observed

TMD patients showed multi-layer retinal differences vs. controls.

Yilmaz et al., 2020 · 34 TMD vs. 35 controls

TINNITUS (DIRECT)

Cochlear nerve thickness linked to retinal measures

Cochlear nerve thickness, hearing loss, tinnitus severity, and retinal/optic measures are associated.

Kaya et al., 2021 · Case-control OCT study

THE NMF HYPOTHESIS

Spinal pathology → tether → retinal thinning

Cervical/thoracic NMF pathology may indirectly affect the visual and craniofacial neurological system.

Neuromyofascial Science · Dr. Lamb

THE BIOLOGY BEHIND THE FRAMEWORK

Why the Mechanism is Biologically Plausible

01

Trigeminal & Cervical Afferents Reach the Cochlear Nucleus

Animal and translational work confirms that trigeminal and cervical somatosensory afferents project directly to the cochlear nucleus and dorsal cochlear nucleus — somatosensory stimulation can alter auditory neuronal firing.

Mechanistic & translational evidence · moderate biologic plausibility

02

Maladaptive Plasticity & Neuroinflammation Sustain Tinnitus

Timing-dependent plasticity and neuroinflammatory signaling can sustain tinnitus-like activity. Migraine biology clearly involves trigeminocervical circuits — the same circuits implicated in cervical NMF pathology.

Translational neuroscience · somatosensory-tinnitus model supported

FOR PATIENTS & CAREGIVERS

You Deserve a Complete Explanation

1. **Ask about your cervical and thoracic spine.** If you have TMJ, tinnitus, headaches, or visual symptoms — your neck and upper back may be the missing piece of your diagnosis.

2. **Request a neuromyofascial assessment.** Look for a practitioner familiar with somatosensory tinnitus, post-whiplash syndromes, and craniofacial pain with spinal contributors.

3. **Ask about OCT screening.** Retinal nerve fiber layer assessment may provide objective data that reflects CNS and neuroaxonal health — not just your eyes.

4. **Know that treatment can reduce tinnitus.** Cervical interventional care and targeted exercise programs have shown measurable tinnitus distress reduction in research settings.

The jaw. The ear. The eye. The answer may live in your spine.

Neuromyofascial Science offers a unified framework — 30 years of clinical observation, supported by peer-reviewed research — for patients who have been told their symptoms don't connect.

Key Citations

Alghamdi et al. 2026 · BMC Oral Health

Lee et al. 2016 · Eur Arch Otorhinolaryngol

Michiels et al. 2018, 2021, 2024 · Trends in Hearing / J Clin Med

Bökel et al. 2025 · J Clin Med

Wang et al. 2021 · Neurol Sci

Tewarie et al. 2023/2025 · MS OCT Consensus

Yilmaz et al. 2020 · TMD OCT Case-Control

Kaya et al. 2021 · Tinnitus OCT · Goshtasbi et al. 2021 · NHANES

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