TIPS AND TRICKS ON THE ASSESSMENT AND TREATMENT OF TREMORS, TENDONITIS AND NERVE COMPRESSIONS

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ASSESSMENT AND TREATMENT OF TREMORS
Tremor is an unintentional, somewhat rhythmic, muscle movement involving to-and-fro movements (oscillations) of one or more parts of the body. Essential tremor is the most common form of abnormal tremor.

Hand tremor is most common but the head, arms, voice, tongue, legs, and trunk may also be involved. Essential tremor may be accompanied by mild gait disturbance. Heightened emotion, stress, fever, physical exhaustion, or low blood sugar may trigger tremors or increase their severity.

There may be mild degeneration in the certain parts of the cerebellum in persons with essential tremor.
ESSENTIAL TREMORS

What are the symptoms of tremor?

**Symptoms of tremor may include:**
- Any attempt to initiate movement will result in
  - Rhythmic shaking in the hands, arms, head, legs, or torso
  - Difficulty writing or drawing
  - Problems holding and controlling utensils, such as a spoon
ESSENTIAL TREMOR

How is tremor diagnosed?

- A physical exam, which includes checking
  - Whether the tremor happens when the muscles are at rest or in action
  - The location of the tremor
  - How often you have the tremor and how strong it is

Anyone can get tremor, but it is most common in middle-aged and older adults. For certain types, having a family history raises your risk of getting it.
LITERATURE REVIEW

- Upper motor neuron disorder
- Does not provide with any treatment information regarding peripheral nerve involvement
- Treatments often prescribed is medication –
  - gabapentin,
  - topiramate,
  - benzodiazepines, and
  - botulinum toxin
- Or surgery
  - thalamotomy or deep brain stimulation of the thalamus
POST TRAUMATIC TREMOR

Observation:
- Body part involved
  - Hands
  - Face
  - Voice

History:
- Insidious onset or
- Trauma
  - Injury
  - Surgery

Pain:
- Area involved

Nerve involvement:
- Sensory
- Motor path
- Mixed nerve

Post-traumatic tremor may also be a consequence of peripheral trauma. Injuries to the peripheral nerves can result in all three types of tremor: rest, postural, and kinetic. Although these tremors may remain restricted to the site of the lesion, they sometimes spread to involve other body regions. In a series of patients with peripheral post-traumatic tremors we studied at Baylor College of Medicine, 60 percent had some evidence of predisposition to tremor such as a family history of ET and/or a prior exposure to certain tranquilizers resulting in tremor as a side effect. Dystonic movements often accompany this type of tremor. In addition, pain, changes in the color and temperature of the skin, abnormal sweating, and atrophy of the bones and nails in the injured part may also appear. The cause of this tremor is uncertain, but it has been hypothesized that peripheral nerve lesions somehow lead to abnormal activity in the predisposed central nervous system. Pharmacologic management of post-traumatic tremors is unsatisfactory in most cases.

Essential Tremor (ET)

Post-traumatic tremors

Francisco E.C. Cardoso, MD & Joseph Jankovic, MD
DIFFERENTIAL DIAGNOSIS

Essential Tremor
Parkinson's Disease
Focal Dystonia

Essential tremor: differential diagnosis and current therapy
Rajesh Pahwa, MD  Kelly E Lyons, PhD
DOI: https://doi.org/10.1016/S0002-9343(03)00259-8
Patient referred with a dx of focal dystonia
Tremor happens only in one extremity
With a particular movement
No tremor at rest
ESSENTIAL TREMORS

Released with myofascial manipulation with nerve glide and Leuko taping
MYOFASCIAL MANIPULATION WITH NERVE GLIDE

- Myofascial manipulation extensors and mobile wad
- Add nerve glide by placing forearm in pronation and wrist in flexion with elbow extended in supine position, head in ipsilateral flexion
LEUKO TAPING

- **Leuko taping** is also done if a component of radial tunnel syndrome is assessed. The taping is done 1” below the lateral epicondyle, measured horizontally from radius to ulna. The tape starts at the radial end while pulling the mobile wad (ECRL/B, Brachioradialis) & then attaching the tape to the ulna. The patient will experience instant relief of pain if radial nerve is involved.
ESSENTIAL TREMOR MANAGEMENT
CASE REPORT 2 - TREMORS – MEDIAN NERVE

• Essential tremors
  • Identify the area involved
  • Release the pressure by providing myofascial manipulation
  • Maintain the release with taping
TREMORS – MEDIAN NERVE

• Managing tremors
EXERCISES

Elbow flexion and extension with forearm **pronation** = 1.9mm
**supination** = 3.0mm

Biceps stretch
Post Traumatic tremors
- Occurs after injury
- Unilateral
- Occurs with active and not necessarily passive movement which requires muscle contraction causing compression of the nerve
- Has associated pain with nerve involvement
- And can be relieved with myofascial manipulation with nerve gliding
- Taping is to maintain release of the nerve
POST TRAUMATIC TREMOR

The concept of neuromobilization (NM) includes connection between mechanics and physiology of the nervous system in which interactions occur both ways and can be beneficial intensely for pain and tremors associated with pain and nerve involvement. Mechanical management may therefore be used to augment physiology of the nervous system.
NM sequencing with myofascial manipulation is the performance of a set of particular physiological movements so as to produce specific mechanical events in the nervous system. Myofascial manipulation techniques with neural mobilization stimulate the deep level of proprioception. Taping is used to maintain the benefits achieved with myofascial mobilization.
ASSESSMENT AND TREATMENT OF TENDONITIS DEQUERVAINS TENOSYNOVITIS
DEQUERVAINS

- Etiology:
  - Tendinosis of the sheath or tunnel
  - APL & EPB
  - Overuse injury / incorrect mechanics, pain with lifting
  - Young mothers
Dorsal Radial Zone: DeQuervains

- Physical exam
  - Pain / tenderness over 1st dorsal compartment

- Finkelstein test

- Resistive thumb extension test
Dequervains Tenosynovitis

- Activity analysis / lifting mechanics
- Mostly treated with splints
- However, when weaning off of splints pts. Still need to avoid ulnar deviation activities and need the input to correct their habits

• Modalities
  - Iontophoresis
  - US
  - Laser
  - Ice
  - Estim
Dequervains Tenosynovitis

Preventing thumb flexion and ulnar deviation of the thumb
Dequervains Tenosynovitis

- Flexibility exercises

- Differential diagnosis
  - Intersection syndrome
  - Wartenburgs syndrome
  - CMC arthritis
## DATA COLLECTED ON DEQUERVAINS

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DEQUERVAINS TENOSYNOVITIS – REASONING BEHIND THIS TECHNIQUE

ABP and EPL involved
Tenderness at the 1st dorsal
However, when the release is performed at the musculotendinous junction then the pain is relieved, and movement regained

Suggesting a length tension problem. Thus, our focus should be a stretching the musculotendinous junction as it may become tighter due to injury causing an increased pull on the tendon resulting in pain. Just changing the angle and direction of the pull results in instant relief in pain and improvement in ROM
ASSESSMENT AND TREATMENT OF NERVES

• Does Nerve gliding exercise work?
ASSESSMENT TOOLS

Provocative tests
Scratch Collapse
ULNT
Testing Nerve gliding exercises

• Scratch collapse test before nerve gliding exercise
• Perform the nerve glide
• Then re-test.
• If the nerve was gliding, then the scratch collapse test will be negative as that is the treatment we provide to release the structures from the entrapped area.
Nerve Gliding

Efficacy of Nerve gliding as seen under ultrasound
THEORY

We theorized that in order for the nerve to glide, we needed to release the structures via manual manipulation around the nerve to allow that nerve to move through the tunnels.

Hierarchy of symptoms

- Numbness
- Altered Sensation Tingling
- Normal Sensation

- Avoid symptom provocation
- Patient reporting imperative

Efficacy of Manual Therapy Including Neurodynamic Techniques for the Treatment of Carpal Tunnel Syndrome: A Randomized Controlled Trial

Tomasz Wolny, PhD,⁎ Edward Saulicz, PhD,⁎ Paweł Linek, PhD,⁎ Michael Shacklock, MPT,⁎ and Andrzej Myśliwiec, PhD*
Efficacy of Nerve gliding with soft tissue mobilization – Median

• Treatment included
  • Myofascial manipulation
  • Flexibility for the structures
  • Segmentally going through the entrapment site
  • Entire nerve was glided

• Shoulder girdle depression
  • Glenohumeral abduction
  • Lateral rotation
  • Supination
  • Wrist finger and thumb extension
Efficacy of Nerve gliding with soft tissue mobilization
After the Soft tissue manipulation combined with nerve glide was performed.

We wanted to assess if the nerve release occurred. We performed scratch collapse test to validate the findings of release with combined myofascial manipulation and nerve glide.
Scratch Collapse after Myofascial Manipulation

• After Neural Glide with Myofascial Manipulation
Comparison Ultrasound

The scratch collapse findings were confirmed with Ultrasound visualization
Efficacy of Nerve gliding with soft tissue mobilization

• Soft tissue manipulation with nerve glide assists with the management of adverse Neurodynamics
  • Restores dynamic balance between the relative motion of neural tissues and the surrounding mechanical interfaces

Grip Test

**After nerve glide without Myofascial Manipulation**

- Right: 22 lbs
- Left: 45 lbs
- Mild to moderate symptoms of tingling in the entire hand

**After Myofascial Manipulation with nerve glide**

- Right: 35 lbs
- Left: 45 lbs
- Almost negligible tingling
- No cyanosis in the hand
Therapeutic exercises following MM and NG

- Exercises need to be designed based on the release and symptom provocation

- Explaining the hierarchy of symptoms with exercises is extremely important in designing exercises and preventing tractioning of the nerve at the entrapment site
Myofascial Manipulation with neural glide

- Use Validation tools
- Use Soft tissue manipulation with Nerve glides
- Treat the nerve in continuity
Efficacy of Nerve gliding with soft tissue mobilization

The neural gliding techniques may be more effective in early stages of compression / post-surgical management to prevent adherence/scarring of the nerve to its surrounding structures. Validate your work with scratch collapse test to ensure release occurred. Grading of nerve compression improves our understanding of nerve glide to assist with designing the customized exercise program.

Randomized control trials including controlled group is needed to replicate these results.
THANK YOU

Job Opening at HOC – Part time / full time OT, willing to train, must have a minimum of 2nd fieldwork in hands to qualify.

www.HandsOnCareTherapy.com

About Saba Kamal