

## Neuromyofascial Pain Syndromes

Patients often present with complaints of numbness, parasthesias, and tingling in the upper or lower extremity. Many times it is not spinal nerve irritation but rather a peripheral entrapment. Many peripheral entrapments in the extremities are often due to a muscle "tunnel syndrome." Peripheral nerves often traverse through muscle or ligamentous tunnels. For example, the median nerve passes between the two heads of the pronator teres muscle; the sciatic nerve passes under the piriformis, and the ulnar nerve passes through the heads of the flexor carpi ulnaris muscle. Tunnel syndromes can result from myofascial trauma such as in car accidents causing overstretch injury to muscle and/or fascial structures; repetitive motion injuries; and sports injuries. Trauma often will promote the formation of adhesions, which by neural compression can restrict intraneural blood flow or tether the nerve. Tractional injuries or force can cause internal neural ischemia with resultant interruption in axoplasmic transport. Four mechanisms by which myofascial entrapment of peripheral nerves can occur include:

1. direct compression between fibers of a hypertonic muscle;
2. direct compression between muscle and an unyielding fascial sheath;
3. direct compression between bone and hypertonic muscle;
4. traction caused by adhesions.

### NEUROMYOFACIAL

#### 1. Thoracic Outlet

1. Scalenes syndrome: The brachial plexus and subclavian vessels are susceptible to entrapment between the anterior and middle scalenes. Patients will typically present with pain and tingling in the upper extremity across the C8/T1 distribution. Numbness is often seen in the hand and forearm. Ischemic symptoms can be seen as well with coldness of the hand and changes in skin color and temperature. Adson's test may be positive.
2. Pectoralis minor or hyperabduction syndrome: The neurovascular bundle gets entrapped between the pectoralis minor and the coracoid process. Hyperbduction often reproduces the symptoms, and Wright's or Roo's tests are often positive.

#### 2. Pronator Teres

The median nerve can get entrapped between the humeral and ulnar heads of the pronator teres muscle. The patient will complain of pain and tingling in the palmar and dorsal aspect of the hand, palm and fingers.

Patients will perceive motor impairment at the thumb and finger flexors, which is a distinguishing factor between carpal tunnel syndrome(CTS) and pronator teres syndrome(PTS). CTS involves mostly the thenar muscles, whereas PTS involves the wrist and finger flexors as well. Resisted muscle testing of the pronator teres provokes the pain, as can Tinel's tap or digital pressure over the pronator teres.

### 3. Flexor Carpi Ulnaris

This muscle tunnel syndrome represents entrapment of the ulnar nerve between the humeral and ulnar heads of the flexor carpi ulnaris muscle.

Patients complain of pain, muscle weakness and parasthesias . Tinel's tap and digital pressure can reproduce the pain. Froment's sign may be seen in long-standing cases.

### 4. Radial Tunnel Syndrome

This syndrome is often misdiagnosed as chronic lateral epicondylitis, because patients complain of lateral elbow pain at the forearm. Stretching the supinator muscle will often provoke the symptoms as well as resisted supination. Resisted middle finger flexion will increase the pain as well. The radial nerve enters the radial tunnel in a fibrous arch between the brachialis and brachioradialis muscles. Further distal, the nerve splits. The posterior interosseous nerve goes through the arcade of Frohse under the supinator.

### 5. Piriformis Syndrome

The sciatic nerve typically passes under the piriformis, but in some cases will pass through it. Hypertonicity in the piriformis can occur due to several factors. Sacroiliac or pelvic pathomechanics can cause piriformis spasm/trigger points, as can lumbar discopathy or radiculopathy. Symptoms include buttock pain, hip pain, positive Lasague's sign, increased pain on internal rotation, decreased pain on external rotation, sensory hypesthesia over the S1/2 dermatomes , and diffuse motor weakness. Pain in the sacral or gluteal region is the most constant symptom.

### Treatment of Neuromyofascial Pain Syndrome

Many treatment techniques that can be used alone or in combination to reverse the effects of neuromyofascitis.

1. Ischemic compression: Often referred to as "Nimmo," digital pressure over the trigger point or use of a taut band is applied for about 5-6 seconds and slowly released, being repeated three times.
2. Postisometric relaxation: Also known as "contract - relax," the patient isometrically contracts the muscle against resistance for about five seconds; then the patient stretches in the opposite direction. This is repeated progressively.
3. Spray and stretch: Developed by Travell and Simons, a vapocoolant spray is used. The patient stretches the muscle progressively. One may use ice massage to accomplish the same thing.
4. Active myofascial release: Developed by Leahy and Mock, there are four phases of releasing

tension/adhesions in the taut bands. Phase III entails digital pressure over the adhesion, while the muscle is passively stretched. Phase IV entails the same thing except with active motion.

5. Manipulation of associated joint dysfunction/subluxation: Sacroiliac adjustments in the case of piriformis syndrome, first rib, C7/T1 adjustments in TOS cases, etc.
6. Exercise rehabilitation and stretching: This is a key component to successful resolution and recurrence of the problem.

### *References*

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JUNE 2000