Guyon's Canal Syndrome

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Introduction

Guyon's canal syndrome is an entrapment of the ulnar nerve as it passes through a tunnel in the wrist called Guyon's canal. This problem is similar to carpal tunnel syndrome but involves a completely different nerve. Sometimes both conditions can cause a problem in the same hand.

This guide will help you understand

- how Guyon's canal syndrome develops
- how doctors diagnose the condition
- what can be done to treat the problem

Anatomy

Where is the ulnar nerve, and what does it do?

The ulnar nerve actually starts at the side of the neck, where the individual nerve roots exit the spine through small openings between the vertebrae. The nerve roots then join together to form three main nerves that travel down the arm to the hand, one of which is the ulnar nerve.

After leaving the side of the neck, the ulnar nerve travels through the armpit and down the arm to the hand and fingers. As it crosses the wrist, the ulnar nerve and ulnar artery run through the tunnel known as Guyon's canal. This tunnel is formed by two bones (the pisiform and hamate) and the ligament that connects them. After passing through the canal, the ulnar nerve branches out to supply feeling to the little finger and half the ring finger. Branches of this nerve also supply the small muscles in the palm and the muscle that pulls the thumb toward the palm.

The hamate bone forms one side of Guyon's canal. This bone has a small hook-shaped spur that sticks out to provide an attachment for several wrist ligaments. Known as the hook of hamate, this small bone can break off and press against the ulnar nerve within Guyon's canal.

Related Document: A Patient's Guide to Hand Anatomy

Causes

Why do I have this problem?

Guyon's canal syndrome has several causes. Overuse of the wrist from heavy gripping, twisting, and repeated wrist and hand motions can cause symptoms. Working with the hand bent down and outward can squeeze the nerve inside Guyon's canal.

Constant pressure on the palm of the hand can produce symptoms. This is common in cyclists and weight lifters from the pressure of gripping. It can also happen after running a jackhammer or when using crutches.

Pressure or irritation of the ulnar nerve can cause symptoms of Guyon's canal syndrome. A traumatic wrist injury may cause swelling and extra pressure on the ulnar nerve within the canal. Arthritis in the wrist bones and joints may eventually irritate and compress the ulnar nerve. In rare cases, the ulnar artery that travels right beside the nerve may be damaged and form a blood clot. The symptoms caused by the clot mimic Guyon's canal syndrome. The lack of blood supply to the ulnar nerve is believed to cause the symptoms.

As mentioned earlier, a fractured hamate bone in the wrist can pinch the nerve inside Guyon's canal. This bone is sometimes fractured when golfers club the ground instead of the golf ball and when baseball players are batting.

Symptoms

What does Guyon's canal syndrome feel like?

Symptoms usually begin with a feeling of pins and needles in the ring and little fingers, which is often noticed in the early morning when first awakening. This may progress to a burning pain in the wrist and hand followed by decreased sensation in the ring and little fingers. The hand may become clumsy when the muscles controlled by the ulnar nerve become weak. Weakness can affect the small muscles in the

palm of the hand and the muscle that pulls the thumb into the palm. Gradual weakness in these muscles makes it hard to spread your fingers and pinch with your thumb.

This syndrome is much less common than carpal tunnel syndrome (CTS), yet both conditions can occur at the same time. The numbness caused by these two syndromes affects the hand in different locations. When the median nerve is compressed in CTS, pain and numbness spread into the thumb, index finger, middle finger, and half of the ring finger. Compression of the ulnar nerve in Guyon's canal syndrome usually causes numbness in the pinky and half of the ring finger.

Related Document: A Patient's Guide to Carpal Tunnel Syndrome

Diagnosis

How do doctors identify the problem?

The diagnosis of Guyon's canal syndrome begins with a careful history and physical examination by your doctor. Compression can occur at several areas along the ulnar nerve, and your doctor will test to find exactly where the nerve is being affected. If it is unclear on the physical examination where the nerve is being squeezed, electrical studies may be ordered to try to find the area of compression.

Nerve conduction velocity
(NCV) is a test that measures how fast nerve impulses travel along the nerve. Your doctor might want this test to be done to help pinpoint your problem. Special tests may be required to study the nerve.

The NCV is sometimes combined with an electromyogram (EMG). The EMG is done by testing the muscles of the forearm that are controlled by the ulnar nerve to determine if they are working properly. If the test shows a problem with the muscle, the nerve that goes to the muscle might not be working correctly. This is similar to checking whether the wiring in a lamp is working. If the light still doesn't work after you've put in a new bulb, you can begin to tell if there's a problem in the wiring.

If your symptoms started after a traumatic wrist injury, X-rays may be needed to check for a fractured or dislocated bone.

Treatment

What can be done for the condition?

Nonsurgical Treatment

Activities that might be causing your symptoms need to be changed or stopped if at all possible. Avoid repetitive hand motions, heavy grasping, resting your palm against hard surfaces, and positioning or working with your wrist bent down and out.

A wrist brace
will sometimes decrease the symptoms in the early stages of Guyon's canal syndrome. A brace keeps the wrist in a resting position (neither bent back nor bent down too far). It can be especially helpful for easing the numbness and pain felt at night because it can keep your hand from curling under as you sleep. The wrist brace can also be worn during the day to calm symptoms and rest the tissues within the canal.

Anti-inflammatory medications may also help control the symptoms of Guyon's canal syndrome. These medications include common over-the-counter medications such as ibuprofen and aspirin.

You may work with a physical or occupational therapist. The main focus of treatment is to reduce or eliminate the cause of pressure on the ulnar nerve. Your therapist may check your workstation and the way you do your work tasks. Suggestions may be given about the use of healthy body alignment and wrist positions, helpful exercises, and tips on how to prevent future problems.