KENAI PENINSULA ORTHOPAEDICS

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Carpal Tunnel Syndrome

Carpal tunnel syndrome, also known as median nerve entrapment at the wrist, is a nerve compression syndrome involving the median nerve along the front of the wrist. Carpal tunnel syndrome is the most common nerve compression syndrome and a very common problem.

Symptoms:

The most common symptoms of carpal tunnel syndrome are pain in the palm of the hand, sometimes radiating to the thumb, index and long fingers, and numbness/tingling in the same area. Sometimes only numbness or tingling is present. Numbness and tingling often occur at night time, and may commonly wake people from sleep. Pain is often dull and aching, but may be sharp or burning. Symptoms may be made worse with gripping and grasping, or with holding the hands in a prolonged gripping position, such as when holding tools or driving with the hands on the steering wheel. With more severe nerve compression, atrophy of certain muscles of the hand may develop, affecting hand function and strength.

Cause:

Carpal syndrome often arises spontaneously, without injury or incident. Overuse of the hand is often implicated as the cause. Injury, such as wrist fracture or dislocation, can also cause symptoms to develop. Diabetes, rheumatoid arthritis, thyroid disorders, and pregnancy are also associated with carpal tunnel syndrome. What actually causes the condition to develop is not precisely known, but it is thought that swelling around the nerve causes interruption of the blood supply to the nerve. The interruption of the blood supply causes the nerve in the hand to fall asleep, causing the characteristic numbness. When the blood supply is re-established, the characteristic painful burning and pins and needles sensations come on. This is very similar to what happens to the foot when you sit with your legs crossed. More prolonged compression can cause permanent, rather than intermittent pain and nerve symptoms. Classically, symptoms are

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present at night time, and frequently awaken patients from sleep. Many people sleep with their wrist excessively and persistently bent or extended, causing interruption of the blood supply and characteristic night-time symptoms.

Diagnosis:

A careful history and physical examination will diagnose most cases of carpal tunnel syndrome. X-rays may be obtained to evaluate for other causes of wrist pain, and to evaluate for bony and soft-tissue abnormalities. Diagnostic ultrasound can be used to measure the size of the nerve; an abnormally large nerve correlates with carpal tunnel syndrome. MRI is rarely required. Formal evaluation by a neurologist (nerve specialist) and evaluation of the nerves (electrodiagnostic studies) is sometimes obtained to confirm the diagnosis, and to rule out other sources of nerve compression. A cortisone injection can also be used to confirm the diagnosis.

Treatment:

Treatment usually begins with conservative (nonsurgical) treatment. Nonsurgical treatment is most effective for those with acute (short-duration) carpal tunnel syndrome. Surgery is reserved for those who do not improve, or who have progression of symptoms despite appropriate conservative treatment.

Nonsurgical Treatment

--Bracing may help to relieve symptoms by restricting wrist movement that can exacerbate median nerve compression. Avoidance of provoking activities, such as prolonged or repetitive gripping and grasping, is sometimes recommended. Modalities such as anti-inflammatories, ice, and heat, may be marginally helpful. Cortisone injections are sometimes recommended to help clarify the diagnosis, and to provide short-term (1-2 months) relief, but are rarely curative.
--Physical therapy is not usually helpful in treating carpal tunnel syndrome.

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Surgery:

Surgery is required when there is progression of nerve symptoms, or failure to improve with conservative treatment. Surgery involves decompressing the median nerve at the wrist (releasing tissue that may be causing pressure on the nerve, and may be done endoscopically through a small incision in the wrist, or as an open procedure with an incision in the palm. Surgery is done in an outpatient surgery setting. Surgery usually results in immediate release of pressure on the nerve, but nerve symptoms may take months to improve. In patients with chronic (greater than 3-6 months) nerve compression, there may be permanent damage to the nerve that is not recoverable with surgery.