

## Upper Extremity

### What Causes This Type Of Pain?

There are several nerve related problems that affect the upper extremities. Carpal Tunnel Syndrome is the most common. Carpal Tunnel Syndrome causes numbness and tingling in the thumb, index and middle fingers. Many times these sensations in the hand awaken patients at night, or their hands may go to sleep during normal activities. This numbness and tingling may come and go, or may be present all the time. Carpal Tunnel Syndrome is caused by the median nerve being pinched or compressed at the wrist in the "Carpal Tunnel".

Numbness in the little and ring finger may be attributed to Cubital Tunnel Syndrome which causes numbness and tingling in the little finger and the ring finger. Patients may experience weakness in their grip, begin to drop objects, and have trouble opening doors or jars. Also fine motor skills such as buttoning shirts may be difficult. Cubital Tunnel is caused by the ulnar nerve being pinched or compressed at the elbow in the "Cubital Tunnel".

Radial Tunnel Syndrome causes numbness and tingling in the back of the hand. This is caused by compression of the radial nerve on the forearm in the "Radial Tunnel".

Many patients have pain in all three nerve distributions referred to as neuropathy. Neuropathy is caused by systemic diseases, the most common of which is diabetes. Patients who are "Pre-diabetic" (those who are overweight with high cholesterol and high blood pressure) exhibit neuropathy symptoms similar to that of diabetic patients. Other causes of neuropathy can include chemotherapy (Vincristine, Thalidomide, Taxol and Cisplatin are common chemotherapy medications that have been proven to cause neuropathy), certain forms of arthritis, thyroid disorders, leprosy, alcoholism, drug use, heavy metal toxicity, and vitamin deficiencies. Still there are many types of neuropathy in which the cause is not known. This is referred to as idiopathic neuropathy.

There are two main types of neuropathy. The first is when the nerve itself has a problem with the body attacking the lining of the nerves. This is a small fiber neuropathy which cannot be treated with surgery. The second is a "Compressive Neuropathy" which is caused by pressure on the nerve like Carpal Tunnel Syndrome. This type of neuropathy may be treatable by surgically relieving the areas of compression on the nerves caused by the surrounding tissues. Diabetics and "pre-diabetics" often get compression neuropathies. This is because in diabetics the nerves are swollen. When sugar (glucose) from the blood goes into the nerve it changes to sorbitol (another sugar). This chemical reaction causes a greater number of water molecules to enter the nerve causing swelling. The swollen nerves run through tight anatomical tunnels in the body. When swollen nerves are in tight tunnels they get compressed causing pain and numbness. By releasing the areas of compression, (the tight tunnels) sensation can be restored and pain decreased. This is the same operation has been done for carpal tunnel syndrome for many years. The success rate of nerve decompression surgery for diabetic and "pre-diabetic" patients is in the eighty-percent range. Decompression of the nerves can reduce or eliminate pain and improve.

### Are There Non-Surgical Treatment Options?

Patients usually first try Carpal Tunnel splints at night and during repetitive motions such as typing. Some patients wrap a towel around the elbow to prevent it from being bent at night while sleeping to relieve the pressure in the ulnar nerve. Patients who have neuropathy should first consult their primary care doctor to determine if their type neuropathy is caused by an underlying disease that can be treated, such as a thyroid disorder, vitamin deficiency

or diabetes. Treatment of the disease can frequently provide relief for the symptoms. Some anesthesia pain management doctors have medical treatment options for those patients who are not healthy enough to undergo surgery or for those who are not good surgical candidates.

### **Who Is a Candidate For Surgery?**

Surgery is an option once it is determined that the patient has failed non operative therapy and that he or she is a good candidate for surgery. Dr. Rosenberg and his staff will use the PSSD (pressure specified sensory device) to measure the function of your nerves. This is a non-painful and non-invasive test that quantifies the sensory loss of the nerve. Dr. Rosenberg will also examine you for a "Tinels Sign" to determine whether there might be signs of compression over the nerves. Patients who are under the age of 75 that are in good health with abnormal PSSD test results and a positive Tinels sign are typically good surgical candidates.

### **What Can I Expect During and After Neuropathy Surgery?**

Nerve decompression surgery is an outpatient procedure that takes about an hour. A general anesthetic is administered by an Anesthesiologist. Using microsurgical techniques Dr. Rosenberg often makes the incisions, finds the nerve(s), follows it to the area of compression and releases the tight band (the top of the tunnel) that is compressing the nerve(s). After Dr. Rosenberg completes the operation, a simple compressive dressing is placed on the hand and elbow and the patient is transferred to the recovery room. There are some patients that notice an immediate difference in there pain as they wake up in the recovery room, others it can take up to several months depending on the amount of compression and the degree of nerve damage from the compression. Recovery from cubital tunnel surgery tends to take longer. The patient is sent home and asked to not lift anything that is heavier than a gallon of milk for the first week to minimize the amount of pressure placed on the operative arm. The final sutures are removed 2-3 weeks after surgery and at this time the patient is released to normal activity.

As the nerves regenerate and grow some patients may experience neuro-regenerative sensations such as shooting, stabbing or electrical types of pain. This is a good sign showing the nerve is growing. As the nerve continues to grow, the numbness the patient had before surgery will improve and the neuro-regenerative pain will improve.

### **Are There Any Risks Involved With Surgery?**

The biggest risk with this operation is that patients may still be left with areas of pain or numbness or there might be no change at all in the amount of numbness and/or pain. The most common risks associated with any type of surgical procedure include minor infections and scarring. Certain medical conditions, such as diabetes, may slow the healing process increasing the risk of infection. Other risks include an increase in pain (which is usually the progression of the neuropathy and not an operative complication).

### **Who Is Qualified to Perform These Operations?**

David S. Rosenberg, MD, is a plastic surgeon who has been specially trained in peripheral nerve surgery. He trained with Dr. Christopher Maloney and Dr. A. Lee Dellon MD (the founder of this procedure) at the Dellon Institutes of Peripheral Nerves Surgery. Dr. Rosenberg uses his extensive experience, education and training to ensure the best care and highest success rate for his patients' surgical outcomes.