

CARPAL TUNNEL and NERVE ENTRAPMENT SYNDROMES

(2ND Installment)

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In the first article on Carpal Tunnel and Nerve Entrapment Syndromes we concentrated on identifying carpal tunnel and nerve entrapment syndromes as our clients present them to us. We learned to recognize how both the client and massage therapists develop an awareness of the common symptoms of carpal tunnel and nerve entrapment. Hopefully, by now you have become aware of a number of clients who are either developing, or have already developed, nerve entrapment or carpal tunnel symptoms. This is the first step in learning to focus on treating these conditions in your clients. This article will further enhance your understanding of these conditions and define treatment goals.

UNDERSTANDING THE CONDITION

Before we can begin to set treatment goals for our clients who present with carpal tunnel and nerve entrapment symptoms, we need to understand how these conditions develop and what the components are in our clients' bodies. The standard definition of carpal tunnel syndrome is an entrapment/compression of the median nerve as it passes through the carpal tunnel of the wrist. However, if you have become familiar with the symptoms specific to carpal tunnel syndrome, you will find there are many other symptoms that have been diagnosed by physicians as carpal tunnel that have nothing to do with the median nerve, the tendons that run through the carpal tunnel, or the carpal tunnel area of the wrist. Therefore, you can see that carpal tunnel syndrome is very often loosely diagnosed. Thus, as massage therapists we need to use a broader perspective for treating the symptoms that involve other nerve entrapments in the shoulder, arm, elbow, wrist and hand. The three major nerves that account for approximately 90% of nerve compression or entrapment in the arm are the ulnar, radial, and median. **Any compression or entrapment of any of these nerves anywhere along their pathways from the neck to the fingertips can cause a client to experience the symptoms that were mentioned in the first article.** The good news is that specialized massage therapy techniques are often the most effective treatment when correctly and efficiently applied.

Nerve entrapments come from many sources. The most common factor in the entrapment of any of the nerves of

the arm is structural imbalance. "How?" you ask. Internal rotation of the shoulder is involved with 90% of all nerve entrapments of the arm, including carpal tunnel. When the pectoralis muscle groups are contracted in internal rotation they compress the brachial plexus. This internal rotation of the shoulder leads to an internal rotation of the elbows, wrists, and hands. In looking at the upper arm, the shortened contracted fibers will be the coracobrachialis. The biceps brachii become involved by being held in a stretch position as well as tightening in compensation for the internal rotation. The median and ulnar nerve pathways are in close proximity of these muscles and the humerus. **Thus the internal rotation creates a compression of these nerves.** When these nerves cross the elbow, they are compressed on the medial epicondyle by the pronator teres and the brachialis that are shortened due to the internal rotation. Internal rotation will cause a compensating tightening in the brachioradialis resulting in compression the radial nerve. With the pronation of the hand from internal rotation the pronator quadratus along with the flexors compress the median and ulnar nerves, while the compensating extensors are pulled tightly over the branches of the radial nerve compressing them. Thus, we have opposing muscle activity involved in the internal rotation. **We have the muscles on the inside of the arm responsible for the rotation contracting over the median and ulnar nerves, and the compensating muscles on the outside of the arm contracting to restrict the degree of internal rotation compressing the radial nerve and its branches.** I hope I haven't lost you with this detailed structural explanation. Suffice it to say that if you trace the nerve pathways of the median, ulnar, and radial nerves, you will see the potential for compression along the whole pathway of each nerve.

There is another complication due to internal rotation that is very important in the understanding of how these conditions become chronic. When the shoulder and arm are in internal rotation and the wrist is pronated, the flexors and extensors of the arm are considerably weakened. Structurally they are in what we will refer to as strain patterns. Generally, when the muscles are in strain patterns they have about 25% of their normal strength and function. However, people still have to do 100% of their normal task. This means they will be doing 100% of their normal task with 25% of their normal strength (thus, the symptom of weakness and inability to hold anything). With repetitive motion the muscles quickly fatigue causing the muscle fibers and connective tissue to develop micro tears. When this repetitive motion is performed daily, these micro tears will form, heal, and then be reinjured, oftentimes with only minimal soreness, until adhesions build up further entrapping nerves and creating increased pain and symptoms as previously discussed. Another negative

result of strain patterns with only 25% of the normal muscle strength available for a task is a rapid build up of ischemia and waste products causing “hot” trigger points. This ischemia will produce swelling and inflammation, both further compressing and irritating the nerves. If you would like to get a quick idea of how this works, sit in a chair, internally rotate your arm, pronate your hand, and pick up a 10 lb weight in a curl 10 times. Note the difficulty, the fatigue, and the discomfort! (*Now, keep this in mind next time you do a massage – are your arms internally rotated and hands pronated?*)

Now that we understand the weakness caused by internal rotation, i.e. strain patterns, we can also understand how the arms and hands and wrists are set up for injuries. One injury that is often overlooked is any trauma that causes further imbalance of the spine as well as the overall structural imbalance of the person. An example would be a whiplash injury that causes an increased internal rotation of the shoulder putting the arm in jeopardy for the problems and conditions mentioned above. I have had many clients who did not have carpal tunnel symptoms until after an auto accident. In the process of treating the internal rotation of the shoulder as it related to the neck, the nerve entrapment symptoms of the arm showed improvement. Often, the clients thought their arms were sore due to the shock of holding the steering wheel, when in reality their pain was a result of the increased imbalance of the neck and shoulder due to the whiplash that caused the internal rotation. An important observation here is that the arm did not hurt immediately at the time of the accident - the pain showed up a week to a month later. Believe it or not, even though the nerve entrapment / carpal tunnel symptoms are most likely a result of the accident, the delay in awareness of the symptoms usually gives the insurance company an excuse to refuse to pay for the treatment since they say it “isn’t a result of the accident”.

Other injuries that involve nerve entrapment of the arms include rapid injuries such as sprains, strains, breaks, or contusions, all of which can increase internal rotation, but definitely have scar tissue and adhesion build up along the nerve pathways. We also have pattern injuries. An example would be tennis players who normally use their arm in an inappropriate pattern which, over a period of time, causes adhesion build up from damaged tissue - i.e. tennis elbow. Another of our most common nerve entrapment patterns is the 20th century computer operators using their arms in internal rotation at the computer terminals. There are almost as many pattern injuries as there are professions. Massage therapists are right at the top of the danger list for developing nerve entrapment symptoms due to the pattern and the repetitive motion of our work.

TREATMENT GOALS

It is extremely important to establish clear treatment goals when working with clients. This is vital when working on conditions such as nerve entrapment and carpal tunnel. Many massage therapists skip this important step. When clear and attainable treatment goals are established prior to treatment, both the massage therapist and the client will be able to measure the success and track the progress. I have found the following three levels of goals work well: 1) primary long term goals; 2) intermediate goals that will achieve the primary long term goals; 3) specific goals for an area that will achieve the intermediate goals. Let’s clarify these further.

- 1. Primary long term goals:** *The client can participate in normal life activities pain free!*
Example: If Jenny, a computer operator, comes in with pain and nerve entrapment symptoms such as carpal tunnel, she will be able to return pain free to her normal life activities as a computer operator following treatment. This goal is what every step of treatment is aiming to achieve. This goal is all-inclusive and is only limited by circumstances where a client is doing activities that are self-injurious and should be stopped because of the inherent injury.
- 2. Intermediate goals that will achieve the primary long term goals:** *Reduce pain, release the strain pattern, restore full range of motion, regain strength, regain coordination, and soften hardened tissues.* With the accomplishment of each intermediate goal, the client is that much closer to pain free participation in normal everyday activities. When all these intermediate goals are met, the primary long term goal is achieved.
- 3. Specific goals for an area that will achieve the intermediate goals:** *Release the internal rotation of the shoulder and arm, release the compression on the brachial plexus, release the adhesions that affect the median, radial or ulnar nerve, reduce ischemia, reduce swelling and inflammation, deactivate trigger points, release myofascial holding patterns, normalize scar tissue, separate bunched groups of muscle fibers.* These goals are all specific to the results we want from the actual work of our hands. As these goals are met, we will achieve the intermediate goals, and ultimately the primary goal.

It is important to communicate your treatment goals to the client. This will help reduce any confusion or misunderstanding right from the beginning, and will provide the opportunity for the client to actively participate in the healing process. It also helps to avoid discouragement on the part of the client when more than one treatment is necessary. The specific goals (#3 above) are often accomplished in the early sessions which gives positive feedback for both the massage therapist and the client as to the improvements. The therapists will then be able to encourage their clients with their observations and palpations, and the clients will in turn be excited and involved in their recovery.

Next installment: Massage techniques that include a three-step approach for deep tissue releases with carpal tunnel and nerve entrapment syndromes.