

Why Our Treatment Approach is Different

About twenty years ago, we began to realize that a localized approach to treating chronic pain is not effective.

Currently, musculoskeletal pain management and research are largely focused on the local structures where pain is felt (spinal discs, joints, tendons and so on) and treatment resources are directed towards restoring the structure and function of those local areas within the *musculoskeletal* system. However, treatment directed only to local painful structures fails to effectively treat many conditions.

Increasing evidence reveals that accompanying changes in the structure and function of the *central nervous system* of people with chronic musculoskeletal disorders play a prominent role in the driving mechanisms of these disorders. Based on these findings, we changed our approach to pain management and rehabilitation of chronic musculoskeletal disorders.

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Chronic Pain and the Sensitization of the Central Nervous System

Neurophysiological changes which develop in patients with chronic cases can actually amplify pain within the spinal cord. First, pain impulses appear to impede the inhibitory system (the system that controls pain perception). Secondly, neurons experience an increase in the size of the area within which they can perceive pain, resulting in



enhanced pain perception. We target these changes through a combination of **nerve blocks** and **direct electrical nerve stimulation**.

Another change to the central nervous system involves descending pain modulatory systems, which control pain in the spinal cord. Under normal circumstances, these systems inhibit the transmission of pain in the spinal cord. There exists convincing evidence, however, that these descending modulatory systems are disrupted in chronic pain patients, shifting from a state of inhibition to a state of facilitation, amplifying the transmission of pain. Our treatment targets these changes through **nerve blocks** and **pulse radiofrequency lesioning**.

These changes to the nervous system begin quite rapidly following an acute injury and are part of what is called, *central sensitization*. Pain is perceived to increase, or wind up, over time. This is sometimes termed the *pain wind-up* phenomenon. Surprisingly, this sensation of pain can persist long after the original injury has healed.

Our Treatment Methods

Most of our treatment modalities are directed to curtail nerve dysfunction and correct the changes in the central nervous system that perpetuate pain. Treatment modalities include **pulse radiofrequency lesioning**, **direct electrical nerve stimulation** and **nerve blocks**.

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Pulse Radiofrequency Lesioning (PRF)

Pulse radiofrequency lesioning, where short bursts of energy are applied to nerve tissue, is used by pain practitioners as a non- or minimally neurodestructive technique. As opposed to standard radiofrequency lesioning (RF) which causes tissue destruction, PRF can be used to treat chronic pain conditions without neuron damage. Many patients with neuropathic pain syndromes which have been poorly controlled with other oral and invasive treatments have shown remarkable improvement with PRF. Multiple studies have confirmed that the electromagnetic energy used in PRF changes pain regulatory genes in cells along the nervous system's pain pathway and helps to reverse exaggerated pain sensitivity due to peripheral nerve injury. Standard RF and PRF can be utilized in facet joint pain and PRF of spinal nerve roots can help with chronic sciatic pain and low back pain.

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Direct Electrical Nerve Stimulation

Direct electrical nerve stimulation (DENS), also known as percutaneous electrical nerve stimulation (PENS) and percutaneous neuromodulation therapy (PNT), involves precise ultrasound-guided needle placement adjacent to the nerves involved in the acute or chronic pain syndrome being treated. The procedure includes injecting a low concentration of local anaesthetic to block small diameter (pain transmitting) nerve fibers, while causing minimal disruption to large diameter (sensory and muscle control) nerve fibers, followed by electrical stimulation of large motor fibers for approximately twenty minutes. The electrical stimulation can prolong the pain blocking effect by altering neural activity at the spinal cord level. Electrical stimulation is also conducted by large nerve fibers to stimulate the inhibitory system and suppress the perception of pain in the central nervous system.

Peripheral and Epidural Nerve Blocks

Multiple studies demonstrate the efficacy of epidural nerve blocks and spinal facet joint blocks in the management of neck pain, low back pain, sciatic pain and arm pain. Peripheral nerve blocks with small amounts of steroid and anaesthetic agents are also used in conjunction with PRF. Studies have shown that anaesthetic agents not only produce temporary anaesthesia to the blocked nerve, but also have an anti-inflammatory component that can augment the results of PRF. Some studies have suggested that the anti-inflammatory effects of anaesthetics are superior in several aspects to those of both non-steroidal anti-inflammatory drugs (NSAID's) and steroids with fewer side effects.

Why Our Treatment is Successful

Chronic pain is very different than acute pain. Simply treating the injured tissue in chronic pain will not address the effects of central sensitization. Our treatment not only addresses localized causes of pain using conventional interventional pain management procedures, but additionally re-educates the central nervous system; essentially unwinding the pain wind-up phenomenon described above. This is why our approach includes the evaluation and treatment of all systems involved in the pain process, not only the assumed “prime pain generator.” This process is not miraculous; it requires time and effort on the part of the patient. However, with time, patients find that our treatments, combined with appropriate lifestyle changes, will improve quality of life and significantly reduce their pain. 95 percent of our new patients are referred to us by existing patients. We take great pride in the fact that our patients entrust us with the treatment of their family and friends. There is no greater proof of the success of our treatment!

“Our treatment... re-educates the central nervous system.”