



MUSCULOSKELETAL MEDICINE, P.C.

Madison-Irving Medical Center

475 Irving Avenue – Suite 402, Syracuse, N.Y. 13210

Phone: (315) 478-9710 Fax: (315) 479-9145

Perineural Injection Treatment

By John Finkenstadt, MD

Perineural Injection Treatment (PIT) also known as Neuropathic Pain Therapy (NPT) is a breakthrough new treatment involving multiple small injections just beneath the skin along painful tender points that correspond to small nerves. A New Zealand physician - Dr John Lyftogt, developed this treatment. This treatment modality primarily applies to chronic pain conditions when the patient exhibits a pain pattern and associated tenderness corresponding to the distribution of subcutaneous nerves. This fairly specific pattern of tenderness must exist for this patient to be a candidate for Perineural Injection Treatment.

Perineural Injection Treatment was also initially termed Neural Prolotherapy. Traditional prolotherapy refers to a treatment modality that aims to strengthen connective tissue (ligament and tendon attachments) and is entirely a separate and different entity than PIT. The goal of PIT is to treat inflamed subcutaneous nerves.

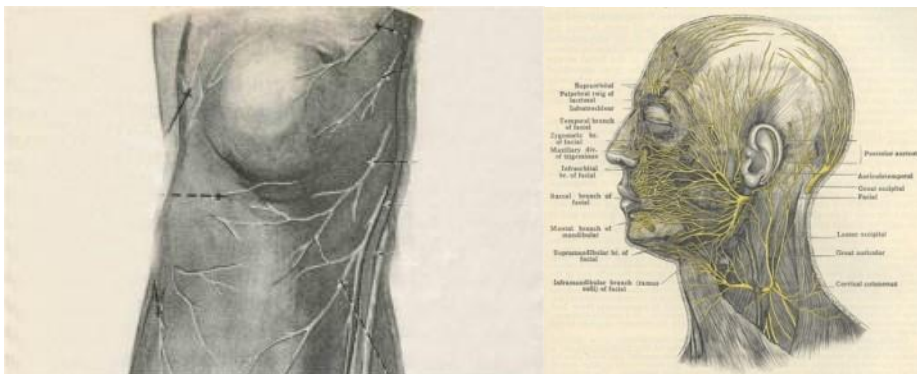
Understanding Pain

Generally there are 2 types of pain.

- 1) The pain we experience briefly like when a baby gets a shot & cries or when we quickly touch a hot stove. This pain can be intense but goes away and is known as **nociceptive pain**.
- 2) The second type of pain is what usually brings patients with pain into a doctor's office: chronic pain. This is pain that lingers and is always there and is known as **neuropathic pain**. Neuropathic pain is thought to be secondary to inflamed nerves (neurogenic inflammation) under the skin. It is these inflamed nerves that give rise to tenderness when the skin is palpated.

What does chronic nerve pain feel like?

Nerve pain can present in a number of ways including, burning, knife like, stabbing, hot, tight, swollen, deep/dull, tingling, creepy crawling, wet sensation, and electric. The pain can be anywhere from head to toe overlying a tendon, bone, or joint etc. Often times, the patient will report pain & limitations that are out of proportion to the structural damage. Subcutaneous nerves are usually not seen by MRI scans or X-ray but nonetheless are thought to be a common primary cause of chronic pain. Just beneath the skin surface exist hundreds of nerves that we now believe play a major role in controlling pain and inflammation. Often patients point to a region and say, "it hurts here!" With the knowledge of anatomy and the patient's explanation of where the pain is we can find these nerves and treat them.

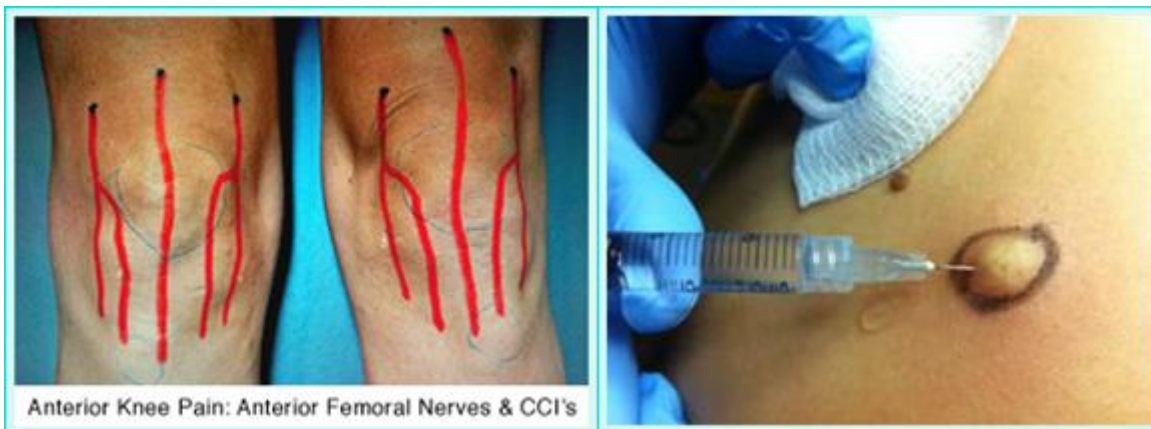


How do these small nerves cause pain?

Following trauma or repetitive overuse, there is a surge of sodium and calcium, which causes these nerves to develop swelling and increased pressure & then “dump” chemicals (peptides called Substance P & CGRP via sensocrine nervous system) that promotes neurogenic inflammation. This causes swelling, pain, tendon damage (loss of type I collagen), & triggers an immune response that leads to cartilage damage/arthritis. This also causes exhaustion, depression & increased stress response in the brain.

What is injected?

A 5% dextrose solution in sterile water, just like the solution used in the Emergency Room for IV hydration, it is safe & relatively harmless. It was recently discovered by a doctor in New Zealand, Dr. John Lyftogt to promote healing and immediately relieve pain generated from these nerves.



How does this treatment work?

We inject buffered 5% Dextrose and water (D5W) beneath the skin surface with a 27 gauge needle (similar to a diabetic needle) in the area over the inflamed swollen nerves. Patients with nerve pain (neuropathic pain) experience pain relief within seconds and often are shocked that their pain is gone without an anesthetic or cortisone etc. Immediately after the injection, we will have them test their pain (grab an object for tennis elbow, squat for knee etc.). Importantly, this not only helps with pain but also often facilitates structural healing.

Dextrose works by immediately blocking the receptor in the nerve (TRPV-1 or Capsaicin receptor) that is the principal regulator of pain and inflammation. This leads to healing beneath the nerve to deeper structures such as tendons and joints (Hilton's law).

Other substances can also block this receptor such as Magnesium & NaCl (Salt), which may explain why Epsom salt bath soaks are so popular. Also Vitamin D blocks this pain receptor and lots of research is pointing to Vitamin D for helping with pain.

In addition to treating the nerves to promote healing, it's important to address the underlying cause. For example, re-educate biomechanics, posture muscle imbalances, and relieve restrictions of movement with manipulation.

What conditions may benefit from PIT?

Many painful musculoskeletal conditions can be helped by PIT. As previously mentioned, the patient must have tenderness to palpation to be a candidate for the therapy. Headaches, neck and low back pain, joint pain as well as other painful areas in the arms and legs may respond to PIT.

How many injections are needed?

Patients receive an initial treatment in office with anywhere from 5 to 30 or more injections containing approximately ½ milliliter solution depending on the nature of injury and region. They return at one to two week intervals for repeated treatments generally from 2 to 8 times. At the completion of the first treatment, the patient should have no further tenderness to touch and no pain with movement of the effected area.

Is the treatment permanent once it's been administered?

Often times the treatment is permanent and patients "graduate." However depending on the severity of the condition, some patients require additional treatments weeks or months after the original treatment series is completed.

Is PIT painful?

There is generally minor discomfort associated with the procedure. The patient will need to be able to tolerate multiple injections with a very fine needle (27 gauge ½ inch needle). The injections are not deep and typically penetrate about ¼ to 1/2 inch below the skin surface. Multiple injections are performed quickly along tender subcutaneous nerve pathways. There is usually no significant pain after the procedure. Generally patients of all ages tolerate the treatment very well.

Are there any activity restrictions post treatment?

There are no restrictions of activity. After the treatment we encourage activity as tolerated. Restoration of motion increases blood flow and promotes healing.

What can the patient expect after the treatment?

The relief from the initial treatment usually lasts between 4 hours and 4 days & will not be permanent. It will require repetitive treatments for long-term permanent relief. Generally patients return in one to two weeks with fewer tender areas to inject & 10-15% gradual improvement in pain intensity. Range of motion also generally improves with treatment.

How often are treatments?

Typically injections are done once weekly or every other week.

Can this treatment be used in sports medicine?

In certain cases, athletes can be treated to aid in recovering from injuries to allow them to heal faster & play without the downside of cortisone.

Can this treatment be used after surgery?

Often patients have large surgical scars that can be a cause of ongoing pain. This provides a safe option to potentially reduce pain naturally, accelerate recovery, and improve range of motion.

If not treated, what can these pains lead to in the long run?

We believe that these nerves are on the front line of maintaining health of the musculoskeletal system. It is theorized that there may only be nerve like pain without structural damage initially but if it persists for many months subsequent structural damage can occur. For example, if someone develops tight calf muscles, for 4-5 months, the pressure increases causing chronic constriction of the nerves (saphenous & sural) that leads to increase Substance P & CGRP (pro inflammatory peptides); then patients develop Achilles pain & tearing. This model explains how patients develop Achilles tendonitis or tearing. Also sick nerves overlying joints on the inside & outside of the knee can produce chemicals that trigger an immune response resulting in worsened arthritis and cartilage damage.

Are there any side effects of PIT?

Soreness at the injection site and temporary bruising are the most common side effects. As with any injection into the body there are always potential risks of infection, fever, allergic reaction, no relief, and worsened pain however these are uncommon.

Insurance and Billing Information:

The billing of PIT is based on the areas and the number of nerves injected. Code 64450 for peripheral nerve block is used. Only one unit is billed for each nerve injected despite the fact that the treatment requires injecting each nerve at multiple points along its course to achieve the desired effect. When the treatment is properly performed, the patient experiences no further tenderness in the areas targeted for treatment and the patient should be able to move the effected part of the body without pain. This occurs as a result of the capsaicin (TRPV-1) receptor on the nerve being blocked. At least one nerve is treated at each session with a practical maximum of 3 separate nerves per treatment. Premedication (conscious sedation), if required, is billed separately.

Summary:

Perineural Injection Treatment is a new development for the treatment of acute and chronic pain. The treatment is aimed at treating inflamed subcutaneous nerves that are thought in many cases to be the primary cause of the patient's pain and tenderness. Eligible patients must exhibit tenderness in characteristic patterns that correspond to the distribution of nerves located under the skin. The treatment consists of multiple injections with a fine gauge ½ inch needle at one to two week intervals. At the end of each treatment session, the patient should have no further tenderness and should be able to move the effected part without pain before they leave the office. An initial treatment trial of 3 treatments is recommended to assess the response of each patient. Many patients treated with PIT achieve a long lasting improvement in their chronic pain condition.