

PROLOTHERAPY

Prolotherapy is a unique, time-tested injection method used to treat chronic pain. It is defined by Webster's New Collegiate dictionary as "the rehabilitation of an incompetent structure, such as ligaments or tendons, by the induced proliferation of new cells." Pain from auto accidents, athletic injuries and overuse injuries often arise from damage to the soft tissues in the body. These soft tissues which include ligaments, muscles, tendons and joint capsules are also called "connective tissues" because they connect to bones, thereby supporting the bony skeleton. Prolotherapy causes these connections to be rebuilt and strengthened. It is for this reason that prolotherapy has also been called ligament reconstructive therapy or stimulated ligament repair.

Common Injuries and Usual Treatment

Typical soft tissue injuries include:

- Whiplash injury to the neck, upper back, shoulders and low back as a result of a car accident
- Headaches and TMJ pain often associated with car accidents
- Low back pain from lifting or work-related injuries
- Overuse injuries such as tennis elbow or shoulder tendonitis
- Muscle pain from fibromyalgia and other similar conditions
- Joint pain from arthritis
- Degenerative conditions of the spine
- Athletic injuries that have never healed
- Chronically weak and unstable shoulder, elbow, wrist, knee, and ankle joints from injury to supporting ligaments

These constitute soft tissue injuries and can become chronically painful. Normally, these injured tendons and ligaments go through a repair and healing process which takes about four to six weeks. But what happens when the low back pain and neck pain, and headaches from a whiplash injury just will not get better? Or the athletic injury that continues to cause nagging pain and is preventing you from staying active, especially keeping you from the sport you enjoy the most? What about the pain where you cannot pinpoint a specific injury, but think it may be due to some repetitive tasks at work, or from overdoing it while working around the home? Anti-inflammatory drugs are often given to treat these injuries, but they may actually slow or stop this healing process.

When rest and pain medications fail, and usually they do because they do not treat or correct the underlying problem, other types of treatment are necessary. One of the most common means of treating these kinds of injuries is with physical therapy - a specific flexibility and strengthening program, tailored to the individual and the areas of weakness. Another effective treatment is deep tissue therapy by a certified muscle therapist.

However, in a significant number of cases, despite a well-conceived rehabilitation program and consistent effort from the individual, residual pain and dysfunction may persist. Other types of treatment such as chiropractic care, massage therapy and acupuncture treatments may only give temporary relief. Chronic pain is often quite disabling and may affect job performance, recreational activities, and activities of daily living. Along the way a doctor may say, "you just have to live with it; there is nothing you can do about it." That news is frustrating and discouraging!

Prolotherapy

Although you may not have heard about prolotherapy until now, in reality, it has been around for more than sixty years and treatment results have been amazing. Up to 85-90% of patients have received good to excellent results when assessing their pain relief and improved function. Just as importantly, pain medications can be greatly reduced or even eliminated. This is good news, because pain medications can be costly and have potentially

serious side effects. But the best part of all is prolotherapy produces long-lasting relief, naturally. Most other types of treatment provide only temporary relief, while prolotherapy gives long-term relief, and can be an alternative to surgery in many cases. George Hackett, M.D., a prolotherapy pioneer, proved that strengthening connective tissue relieves soft tissue pain, and a research study in the respected medical journal, *The Lancet*, also demonstrated the effectiveness of prolotherapy.

How Does Prolotherapy Work?

Prolotherapy works on a very simple principle: injecting the prolotherapy solution into the sites of pain and weakness stimulates the body's own natural healing mechanism to repair and rebuild injured tissue into a stronger, more supportive, less painful tissue than it was before.

When injuries to the connective tissues (ligaments and tendons) occur, the normal healing process may be incomplete. This incomplete healing process is revealed under microscope by a deficiency of connective tissue cells called fibroblasts. These loose and weakened ligaments lack normal cellularity and therefore have less strength. As a result, the normal supportive function of the ligaments which was present prior to injury is lost. Joint stability is thereby reduced.

Small pain fibers in these weak ligaments transmit pain impulses to the brain. Through an unconscious reflex, the surrounding muscles go into a tight and painful spasm in an attempt to stabilize the joint. This causes the region to feel tight, stiff, achy, burning, tingling, numb, fatigued and painful. The individual will often notice painful knots in the affected muscles. These muscle spasms reduce blood flow, causing even more pain. Not only are these symptoms local, but they are often referred (transmitted) through nerve pathways into the legs and feet, arms and hands, and can even result in headaches. In other words, pain felt in the arms or legs may actually be due to instability in the neck or back.

Medications and other forms of passive treatment such as ultrasound, ice, heat, massage, acupuncture and manipulation may give minimal lasting benefits because the primary problem is not being addressed - which is the loose and injured ligaments. Stretching and strengthening exercises can usually provide some relief from chronic pain, but this is often only temporary. When these exercises have failed to increase the support sufficiently to diminish pain and improve function, the chronic pain cycle ensues. Prolotherapy should thus be initiated as soon as possible, before the problem becomes widespread.

The most basic prolotherapy solution contains a naturally occurring sugar (dextrose) plus an anesthetic (lidocaine). Other natural substances can also be used effectively. The solution does not contain cortisone, which is known to decrease inflammation, but can also slow or stop the healing process. Acute pain may be relieved with cortisone, but repeated use causes a weakening of the tissues and chronic pain develops. When the injured tissues are injected with small amounts of the prolotherapy solution, a reaction begins, starting a three-stage healing process.

Three Stages of Healing

- Inflammation

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- Increased blood flow, swelling and pain. Cells are called in to remove damaged tissue
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- Occurs during 1st week

- Fibroblastic
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 - Swelling and pain begin to subside, new blood vessels form. Cells begin to form new collagen
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 - Starts at day 2 or 3 and continues for 4-6 weeks

- Maturation
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 - New blood vessels mature, tissue is stronger and pain subsides. Collagen density and diameter increased
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 - Continues from week 6 to 18 months after injury

Prolotherapy initiates the first stage (inflammation). Stages two and three follow automatically. The body sends in special cells which help to clean up the debris, much like a cleanup crew at a construction site. These cells respond as if another injury has occurred resulting in a controlled inflammation. This process takes a week. The body then begins a process of repair and healing. This is accomplished by the addition of a unique cell called a fibroblast which is deficient in the injured tissue. Fibroblasts increase in number at the sites of injection and over the course of four to six weeks secrete a substance called collagen which is a very strong and relatively inelastic substance. The new collagen makes the ligaments thicker, denser and stronger, providing more support to the joints. The strength of the injected ligaments can increase up to 40% above normal. Stability is increased as pain and muscle spasm decrease. The newly formed tissue continues to mature for one and one-half years.

So, in essence, prolotherapy strengthens ligaments and decreases pain by stimulating the body's own repair and healing mechanism to go into action. There is no masking of pain. Tissues heal naturally and become stronger, without the formation of scar tissue. It is for this reason that prolotherapy gives long-lasting relief measured in months to years.

Why Haven't You Heard of Prolotherapy Before?

So why then doesn't everyone with chronic pain, or at least your doctor, know about prolotherapy? It seems strange since so many people have benefited from prolotherapy. However, several logical explanations come to mind:

1. Chronic pain is not well understood by most health care professionals, and therefore, is frustrating to treat. Thus, the comment, "There is not much you can do about it; you just have to live with it".
2. Prolotherapy is not taught in medical schools, so doctors are unfamiliar with it.
3. The technique of prolotherapy requires an in-depth knowledge of anatomy and the skill to place the injections accurately. It takes a great deal of study and training for a physician to become adept at the technique.

4. The procedure takes up to one hour of clinic time, and most busy clinics cannot afford to take this amount of time for one patient.
5. Many doctors and patients are looking for a "quick fix," but prolotherapy results do not occur overnight. Therefore, the prolotherapy patient must be committed to the treatment because multiple sessions are required.
6. Pharmaceutical companies are not promoting it because there is no money in it for them. Prolotherapy solutions contain common and inexpensive substances. Drug companies cannot obtain exclusive manufacturing rights, so there is no investment potential, and, thus, no profit to be made.
7. Because there are very few doctors who perform prolotherapy, patients typically just accept the pain or have surgery. While surgery has its place, many patients and doctors are not aware that prolotherapy may relieve their pain and delay or prevent the surgery they thought they needed.
8. Since prolotherapy is considered by most insurance companies to be "investigational" and "alternative," and is not usually covered.

What About the Procedure Itself?

Prolotherapy is a very safe procedure when performed by a trained and highly skilled physician who has an in-depth knowledge of anatomy and experience using this injection technique.

The soreness following the injection is normal and gradually lessens over several days. Approved, prescribed drugs or regular Tylenol may be taken for pain. However, no anti-inflammatory drugs may be taken during the treatment period because these will interfere with the healing process that prolotherapy initiates. A goal of prolotherapy is to get the patient off all pain medications.

Can Prolotherapy Cure Everything?

Prolotherapy is not an overnight cure. It cannot cure every condition, nor always eliminate 100% of one's pain. The results are excellent, considering that other treatments have not provided sustained relief from the pain. Combining other treatments such as muscle therapy, physical therapy, oral supplements and exercise further enhances results. It is also reassuring that prolotherapy only strengthens tissues. No structures are weakened and no scars are formed. Therefore, no bridges are burned.

A good history and a thorough examination are necessary to select the best candidates for prolotherapy. The motivation to want to get better and complete the necessary treatments is vital. Patience and time are important to reap benefits from prolotherapy. Chronic pain problems do not occur overnight and they do not heal that way either. Individuals who smoke, drink excessively, have unhealthy lifestyles or poor fitness, are obese, have underlying diseases or are under stress may have poorer healing, which can decrease the effectiveness of treatment. The goals of prolotherapy are to decrease pain and to improve the patient's overall ability to function at work, at home, and during usual activities.

In Summary

In summary, prolotherapy is an effective treatment for a multitude of conditions. There is no other treatment that

replaces prolotherapy for strengthening weakened ligaments. It works by stimulating the body's own healing process at the sites of injection. Healing occurs slowly but surely - and naturally. Multiple treatments are usually necessary to achieve maximum joint stability and long-lasting relief from pain.

Dr. Gary Collier administers prolotherapy at Integrative Healthcare Center. As a board certified physician and member of the American College of Osteopathic Pain Management and Prolotherapy, he is trained to evaluate and treat musculoskeletal problems and utilize prolotherapy.