

PROLOTHERAPY (Regenerative Injection Therapy)

Prolotherapy (proliferative therapy) is a non-surgical treatment for damaged ligaments that relieves musculoskeletal pain. An irritant solution is injected into areas where ligaments are weak, triggering the body to heal the injury and thereby naturally strengthen the joint. The Therapy has its roots in an ancient, if barbaric-sounding, method of healing. In 400 B.C., Hippocrates (the father of modern medicine) learned to heal javelin throwers' shoulders by thrusting a hot lance into the joint. The result of this primitive precursor to prolotherapy was a restored joint that was often stronger than the original. When the wound healed, the scar tissue has made it stronger and many of the soldiers were able to throw their lances farther than they could before.

Modern prolotherapy evolved from an injection technique called sclerotherapy, which was first used in the 1920's to treat hernias and hemorrhoids. In the 1940's Earl Gedney, a well-known osteopath at the Philadelphia College of Osteopathic Medicine began to use sclerotherapy for back-related ailments. It was George S. Hackett an M.D. from Canton, Ohio who first coined the term "prolotherapy" in the 1950's. His book *Ligament and Tendon Relaxation Treated by Prolotherapy* continues to be used as a basic training reference. When ligaments and tendons are stretched, torn or fragmented, joints become painful. Traditional approaches with anti-inflammatory drugs and surgery often fail to stabilize the joint and relieve pain permanently. Prolotherapy has the unique ability to directly address the cause of instability and repair the weakened sites, resulting in permanent stabilization of the joint. When precisely injected into the site of pain or injury, prolotherapy creates a controlled inflammation that stimulates the body to lay down new tendon or ligament fibers resulting in a strengthening of the weakened structure. When the joint becomes stronger, pain may be relieved.

Prolotherapy has been scientifically observed to increase the size of tendons and ligaments up to 40%. It has also been shown to increase their tensile strength by as much as 200%. No scar tissue is formed (as would be the case in surgical procedures). The tissue formed from Prolotherapy is healthy, strong, flexible ligament or tendon tissue. Once

the ligament or tendon has been repaired by prolotherapy, the nerves are no longer stretched or irritated, and the pain goes away. The therapy involves injecting a simple solution of concentrated dextrose or another solution usually with local anesthetic into ligament or tendon attachments to bone. The solution is referred to as a “proliferating agent” because it produces a “proliferation of inflammation” in the injured area. This happens when the body’s antiinflammatory cells, called macrophages rush to respond to the inflammation, stimulating a natural healing response and promoting growth factors in the cells of the affected tendons and ligaments. Connective tissue builders called fibroblasts lay down new fibrous tissue wherever they detect damage, while other natural substances trigger the growth of new blood vessels and the flow of nutrients. This localized inflammation increases the blood supply and flow of nutrients and stimulates the tissue to repair itself.

Almost anyone can receive prolotherapy. In the hands of a competent practitioner, prolotherapy is extremely safe. Each person’s response to prolotherapy is different. The average number of treatments needed ranges from one to six. An injection is painful but very few patients require sedation or pain medication to undergo the treatment. As treatment progresses, the injections become less painful to receive. You may experience mild swelling and joint stiffness after prolotherapy injections, but these problems are temporary and can be treated with over the counter pain relievers such as Tylenol Advil, or Motrin. Medication such as Tylenol #3 and other narcotic medications are acceptable to take if necessary and will not interfere with the beneficial effects of the injection(s). Heat rather than ice may also be beneficial. It is normal to experience muscle soreness for a few weeks after the treatment. This is most noticeable for the first two days after injection. There is a “window period” of about two weeks as inflammation subsides but healing of the ligament is not complete. During this period there may be a return of some of the original pain. Starting around four weeks after a treatment, ligament strengthening is occurring and about 75% of the benefit of the injection is noted. Re-evaluation and treatment is scheduled at six weeks because it takes about six weeks for 100% of the benefit of the treatment to be realized.

Although clinical research on prolotherapy is limited, a few studies reported in reliable medical journals have shown good-to-excellent

results in pain relief in up to 90% of those who have tried it. Because the principle of prolotherapy can apply to a broad range of problems that cause musculoskeletal pain, it has been used successfully to treat many different conditions. The Florida Academy of Pain Medicine published a position paper on the Effectiveness and Appropriate Use of Regenerative Injection Therapy in *The Pain Clinic Magazine*, Vol. 4 No. 3 June 2002. Using 138 cited references, they state: "RIT is a safe and effective treatment modality that is very useful in a significant number of pain syndromes arising from ligament and tendon diathesis, as well as other clearly delineated pain problems. Physicians who use RIT must be knowledgeable in clinical anatomy and function and should be properly trained in this technique via a combination of seminar/workshops, apprenticeships or visiting fellowships in order to safely and effectively utilize this treatment. The Florida Academy of Pain Medicine endorses RIT when administered appropriately for the treatment of specific chronic pain entities."

Prolotherapy is an approved form of treatment by the American Osteopathic Association and is endorsed by the former Surgeon General of the United States, C. Everett Koop, M.D. Physicians have been trained in RIT since the 1930's.