# BEST-KEPT SECRET FOR PAIN SUFFERERS - MIRACLES FROM NEEDLES

Anna Lee, MD

"Dr. Lee's first treatment successfully relieved my pain that I had lived with for 23 years. For years, I have tried every type of treatment including surgery and medication… After the 2nd treatment I was able to eliminate all pain medications." – *John Weiss*

"I underwent two low back surgeries but I was left with incapacitating back spasm. Dr. Lee gave me A-IMS treatment, I received spectacular relief, my depression went away, my pain went away. Dr. Lee has certainly given me my life back." - *Dr. Donald Underwood*

"I have been suffering from severe back pain for years now. It was pretty much constant and I had resigned myself to having to deal with it for the rest of my life … In one treatment, Dr. Lee was able to get rid of my pain and completely changed my life. Thank you Dr. Lee! – *Marlina Randazzo*

How could this be? But these are only a few of the stories that I have heard from my patients. Some of my patients call me a "miracle worker." In the following, you will hear the rest of the story.

## Experience Counts

I started medical school at the age of 35 when my two daughters were quite young. After finishing my MD degree from Hahnemann Medical College in Philadelphia, I did a year of internship followed by a year of residency in anesthesiology. During this period, I became pregnant unexpectedly. The delivery was rather traumatic because of the intense pain I had during the labor. I refused epidural anesthesia thinking that I could handle labor pain. Little did I know - my body at age 41 was not flexible enough to have a natural birth. My post-partum recovery was also complicated with vaginal bleeding due to retained placenta. Since then, I developed pain in the left mid-scapular region. The pain spread to my neck with severe headache and weakness in both arms. I had to wear a soft cervical collar all the time to hold my head straight. The range of motion of my cervical spine was very limited. I had to be on disability for about 7 months to recover. I was treated with a physical therapy program with no noticeable improvement.

I felt I had to switch my residency because I could not handle the physically-demanding anesthesiology residency any more. I chose physical medicine and rehabilitation and started my residency at the Hospital of University of Pennsylvania. During this time, I met an attending

physician who was doing pain management with *intramuscular stimulation* (IMS) procedure with a needle. Because I was a chronic pain patient by then, I wanted to try it myself. The MRI of my cervical spine showed a herniated disc at C3-C4 that was abutting against the spinal cord and two disc bulges. Surprisingly, after about 3 months of the IMS treatments, I got almost total relief from my pain. I became intrigued with this procedure, and decided to devote myself to it. After finishing my residency, I stayed for one more year for fellowship training to learn about this procedure.

At that time, the *IMS* treatment was done manually using an acupuncture needle with a plunger. Basically, it was a dry needling procedure to elicit so-called 'LTR' (to be explained shortly) from the affected muscles. The needle is inserted first into a target muscle and then it is moved in a piston-like motion in small amplitudes until a 'twitch response' is obtained. The 'twitch response' is a sudden contraction of the muscle followed by an immediate relaxation – this is called 'Local Twitch Response' or LTR. It was shown in the literature that LTR is essential for breaking the spasm and fast recovery from pain.

During my fellowship year, I was doing the manual IMS procedure on patients 3-4 days a week. It was repetitive manual labor the whole day – constant pushing and pulling of a needle in a piston-like motion in tight muscle bands. The acupuncture needles occasionally bent because of the tightness of the muscles. Patients got better but the attending physician and I got worse (in terms of pain from repetitive motion injury). My husband advised me to ask the University to make an automated needling device for doing the *IMS.* So, my attending physician and I invited the Chairman of the Biomedical Engineering Department to our clinic and let him observe the procedure. He said he would not have any problem making an automated device in 6 weeks. We went back to him after 6 weeks to find him empty-handed. That was the most disappointing experience I ever had in my career.

Hearing the bad news, my husband Young Lee, who was then an engineering professor, made a prototype automatic needling device within a week. He used an EMG needle which was about twice as thick as an acupuncture needle to eliminate the 'bending' problem. I received an IMS treatment with his automated device first hand on my right triceps muscle. To my great surprise, I experienced less treatment pain (due to the slippery nature of the Teflon coated needle) and the LTRs elicited were noticeably stronger than those obtainable with the manual needling. Stronger LTRs meant faster pain relief.

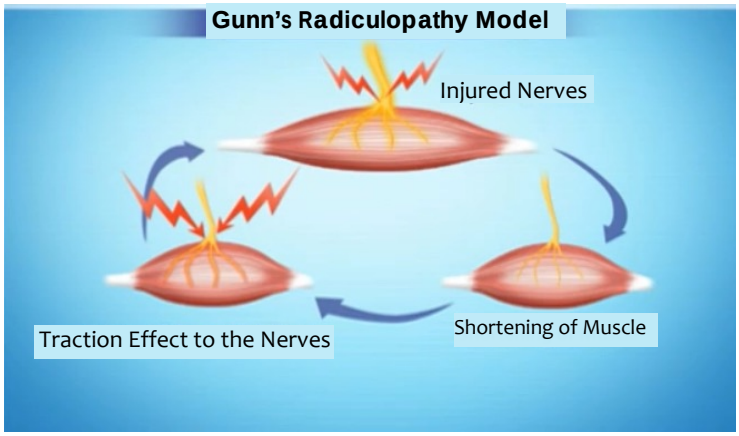
With my full confidence, I opened a practice with this automated needling device. I named the procedure A-IMS, i.e. 'Automated Intramuscular Stimulation'. Since then I have treated thousands of patients successfully. Later, I had some reimbursement problem with insurance companies on the ground that I was providing an experimental treatment to my patients. This

prompted me to apply for an FDA approval of the device. As part of the application I was asked to do a clinical trial study and I chose tension headache as the topic. The application process took about 3 years. The safety and efficacy of the A-IMS procedure was thoroughly examined by the FDA. Finally, FDA approved using the device for treating tension headache and for intramuscular stimulation.

## Pain Cycle – Why Pain Persists

There are two main ideas on the cause of perpetuating chronic muscular pain – called 'pain cycle'. One by Chan Gunn (1977) and the other by David Simons (1997).

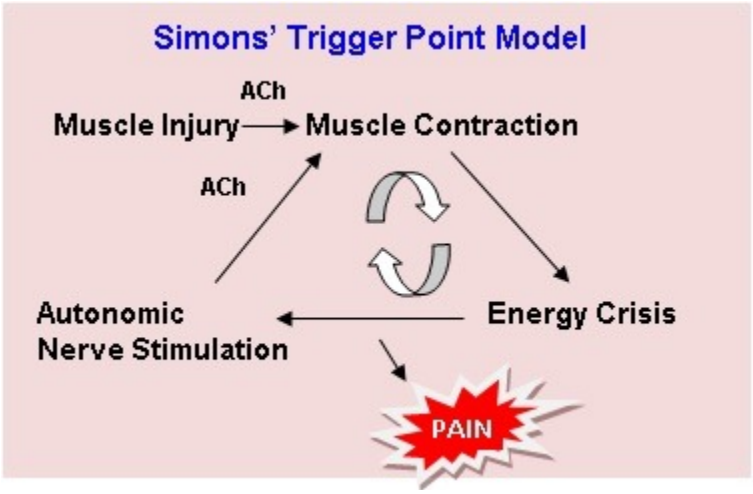
**Gunn's Radiculopathy Model** Suppose a person suffers from an injury to the neck or back due to sports activities, car accidents, or in a slip and fall accidents. The person's head and neck are over extended, over flexed and/or rotated as a result of the impact during the accident. When this happens, the spinal nerve roots can be stretched, bruised, and compressed resulting in nerve root injury, or radiculopathy. When this occurs, the result is spasms in those muscles where the nerve endings are embedded – making the muscles short and tight.




These muscle spasms put a traction effect on multiple nerve roots, thereby causing more nerve root irritation and more muscle spasms. Vicious pain cycle initiates this way and this perpetuating pain cycle is often the cause of so many pain syndromes. Patients can experience pain, numbness, tingling and weakness in their neck, low back, arms and knees, and even in their hands and feet.

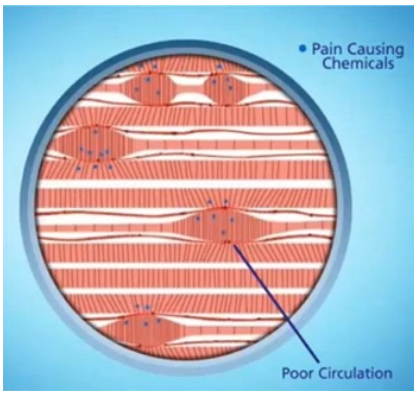
**Simons' Trigger Point Model** When muscles are injured, excess acetylcholine (Ach) is released at nerve endings that are embedded in those muscles and this causes muscles to

contract. The increased metabolic demand for the contraction and oxygen-deprived condition in this zone (due to the lack of oxygen supply from blood vessels) result in an 'energy crisis' (note: without oxygen, energy cannot be produced). Under this condition, additional chemicals are released that cause pain and more contraction of muscles. The end result is again an initiation of the muscle contraction cycle which generates persistent pain.




### *Trigger Point: The Culprit*

Muscle spasm is defined as 'an involuntary contraction' of a muscle that can cause pain. The region of muscle spasm is called the trigger point - often palpable as a tender muscle knot or a tender region in a taut muscle band. This area is either spontaneously painful (called the active trigger point) or painful when pressed (called the latent trigger point). When the trigger point is examined microscopically, there are multiples of individual muscle fibers that have knots in them. The general consensus is that the formation and maintenance of trigger points in the muscle is the reason why patients experience pain and sensory symptoms.




***Trigger Point: there are multiples of muscle fibers that have knots in them.***

When the trigger points exist, the muscles are shortened, tendons are pulled, blood vessels are compressed and the nerves passing through the zone are squeezed. This causes (1) pain locally and distally (called 'referred pain'); (2) various sensory symptoms such as numbness and tingling and (3) sometimes restricted range of motion. Trigger points can be formed quickly after a trauma or slowly over a long period when stress is applied to the muscles gradually - such is the case with habitual bad posture or repetitive motion.

## Two Major Findings – the Beginning

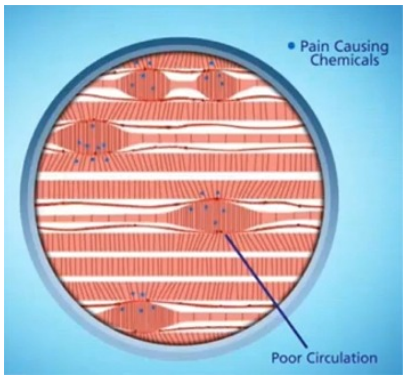
Physicians have been using injections of medication - such as Lidocaine - into trigger points to treat pain. They have found accidentally that the same pain relief can be achieved even without the medication, i.e. with *dry needles*. Hence the term 'dry needling' was born.

A major finding in treating trigger point came in 1994 by a physician Chang-Zern Hong of University of California Irvine. He studied the effect of LTR for both wet (meaning injection of medication) and dry needling onto trigger points in the upper trapezius muscle. He used 58 patients: for 41 patients (Group 1), LTRs were elicited while, for 17 patients (Group 2), no LTRs were elicited. Among Group 1 patients, 26 were injected with 0.5% Lidocane while no medication was injected for 15 patients (dry needling only). Among Group 2 patients, 9 were injected with 0.5% Lidocane while 8 were dry needled. The results were astounding. He observed *significant immediate improvement of pain for group 1 patients* while there was little change in pain, tenderness or tightness for group 2 patients. He concluded that

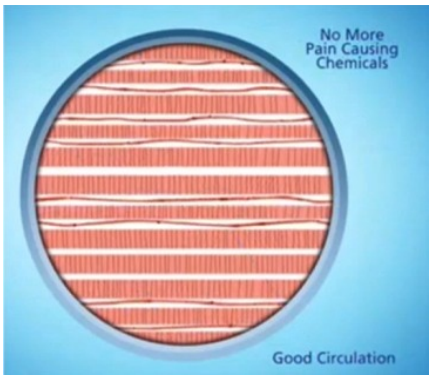
> ***"It is essential to elicit local twitch responses (LTRs) to obtain immediate desirable effect (of pain relief)".***

The other important finding was that wet needling – i.e. injection with medication - is not necessary to obtain pain relief.

The other major scientific finding came in 2005 by the NIH researchers lead by J.P. Shah. His group did analysis of chemicals in the active trigger point zone before and after LTR. *They found a significant level of noxious chemicals that contribute to muscle contraction and pain in the active trigger points* before needling*. However, immediately after LTR elicitations the concentrations of these chemicals returned to normal levels.* This was essentially a direct scientific proof of what Chang-Zern Hong has observed.



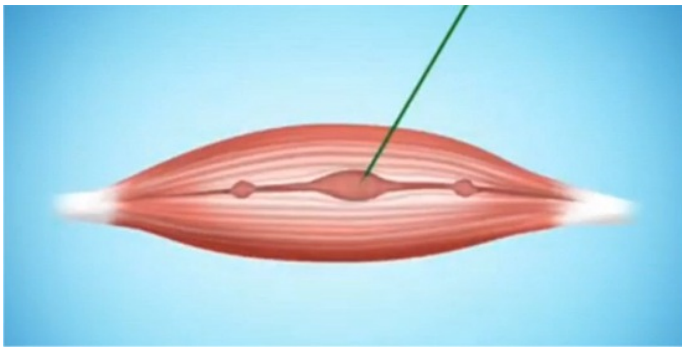

***At trigger point zone, muscle fibers have contraction knots.***




***Immediately following LTR, trigger point is eliminated.***

## LTR – The Key for Pain Relief

It was discovered that when a needle is placed in a trigger point zone and stimulates the zone mechanically, the muscle contracts suddenly and then relaxes immediately just as in a spinal reflex. This is called 'Local Twitch Response' (LTR). For LTR in action, watch https://www.youtube.com/watch?v=ypklTVYCMLw.



***Eliciting LTR at a trigger point:***
***needle stimulation at a trigger point elicits LTR.***

***Needling of Tensor Fasciae Latae Muscle***

***LTR of Tensor Fasciae Latae Muscle***

There are different levels of LTRs: one that is so small that only the patient can feel, one that is clearly visible locally, and one that is so big that the whole muscle moves and even the joint moves. Through treating thousands of patients, I have found that pain relief depends on (1) the strength of LTR and (2) the number of LTRs elicited. The stronger the LTR, the better the pain relief. The greater the number of LTRs, the better the pain relief. When strong LTRs are elicited in a sufficient number, then the muscle knot disappears and the tight muscle band softens. The patient feels the loosening of the muscle tension, relief of pain and recovery of range of motion almost immediately after the treatment. When twitches are elicited, blood supply increases in the trigger point zone. The area becomes slightly warm to touch and slightly red.

## Manual Needling Is Like a Horse and Buggy

***Manual needling with an acupuncture needle***

Acupuncture needles are used in manual dry needling. A needle is inserted manually and the practitioner grabs the handle of the needle and moves the handle in a piston-like motion in small amplitudes to elicit LTRs while the needle stays within the muscle. Needles of small diameter – on the order of 0.25 mm (0.2 to 0.3 mm) – are used because larger diameter needles cause considerable pain for patients during treatments.

The trigger point zone in the muscle is often very tight. Sometimes, they are so tight that inserting a needle alone requires great effort. Needles sometimes bend during dry needling of tight muscle bands and this makes needling very difficult if not impossible. Often, the mechanical stimulation of trigger point zones needs to be performed for quite a while to elicit sufficient number of LTRs for an effective treatment. This is a very difficult task with manual needling. With manual needling, the number of trigger points eliminated is none to a very few. As a result, the recovery from pain is generally a slow process.

## A-IMS Is Like a Model T


***A-IMS uses Automated Intramuscular Stimulator Device***

The A-IMS procedure was developed to overcome the short comings of the manual needling. In 1996, a device called Intramuscular Stimulator was invented by Dr. Young Lee. Instead of manually manipulating the needle, a motor is used for automation. Instead of a thin acupuncture needle (of the diameter on the order of 0.25 mm), a much thicker, Teflon coated needle of about 0.4-0.45 mm diameter was used for ease of needling tight muscle bands. This device is used in A-IMS procedure. As the needle diameter increases, the treatment pain felt by patients becomes worse. To overcome this difficulty, pre-medication is used in A-IMS procedure so that patients can be treated comfortably. Clinical experience showed larger diameter needles produce much stronger LTRs compared with the manual needling method.

In the following table, comparisons are made between the manual needling and the A-IMS procedure. As you can see from this table, A-IMS procedure enable removal of a large number of trigger points in one treatment. This leads to a much faster resolution of pain symptoms compared with the manual needling method.

***Table 1. Comparison of Manual Dry Needling and A-IMS Procedure***

| | ***Manual Dry Needling*** | ***A-IMS Procedure*** |
|---|---|---|
| Needling Action | By hand | By a motor |
| Needle Diameter | Av. 0.25 mm (0.2-0.3) | 0.41-0.45 mm (Teflon coated) |
| Tight TRP* Needling | Difficult or impossible | Relatively Easy |
| Strength of LTRs obtainable | Weak | Strong |
| Number or trigger points removed | Zero to a few | Up to a hundred |
| Premedication Used | No | Yes |
| Treatment discomfort felt by patient | Painful | Comfortable |
| # of treatment for pain resolution | Many treatments are needed. Sometimes impossible. | A few treatments |
| Miracle** possible? | Almost impossible | Yes, it does happen |

*TRP = Trigger Point
** Resolution of chronic pain symptoms in one treatment

## Miracles Do Happen

In the beginning of this article, you have read patient testimonials like: "Dr. Lee's first treatment successfully relieved my pain that I had lived with for 23 years" or "In one treatment, Dr. Lee was able to get rid of my pain (that existed for years) and completely changed my life." Patients call this 'a miracle.' With the A-IMS procedure, 'miracles' do happen. I have seen patients who came into my office on a stretcher, walk out of my office free-standing after the treatment – just like the miracles written in the Bible.

Earlier, it was mentioned that the cause of severe chronic pain is the existence of trigger points in the affected muscles. When most of the trigger points are eliminated in one single treatment, then the patient will become pain free no matter how long he or she has suffered. "23 years old severe chronic pain is removed in one treatment" means that most of the trigger points in his muscles have been removed in a single treatment! The same is true with the other testimonial of 'life-changing experience' in a single treatment.

It must be noted however, that not all patients respond 'miraculously'. Depending on the quality of the muscle, recovery time varies: patients with muscles that twitch well, the

prognosis is excellent (the patient will recover fast); patients with muscles that twitch poorly, the prognosis is not so good (the patient will recover slowly). The worst case is when the muscles become fibrotic due to many years of significant spasms. For these patients the prognosis is not good even with the A-IMS treatment. Fortunately this type of patients is rather rare from my many years of clinical experience.

## Epilogue

I have a mission to let the world know of this powerful procedure so that people suffering from severe myofascial pain syndrome can get help. Those who have an interest or a question can reach me via e-mail: drlee1@optimum.net. You can visit my website: www. bergenpainandrehab. Or, call my office: 201-731-3900.