

# TRIGGER POINT INJECTIONS

## *Techniques, Pitfalls, and Alternatives*

Tips on practicing good technique for inactivating trigger points while avoiding pitfalls and minimizing complications.

By Bernard E. Filner, MD

**Editor's note:** This article is adapted from Dr. Filner's presentation titled "Techniques of Trigger Point Injections" at the American Academy of Pain Management annual meeting in Nashville, Tennessee in September, 2008.

A myofascial trigger point is defined as a hyperirritable spot, usually within a taut band of skeletal muscle that is painful on precise compression, and that can give rise to characteristic referred pain, tenderness, and autonomic or other epiphenomena. They can be active, latent, primary, secondary, or satellite. Twitch responses are usual. They are found at areas with high concentrations of endplate.<sup>1,2</sup> An illustration of a dysfunctional endplate region is shown in Figure 1 and represents a site at which either a trigger point injection or inactivation with a low-level laser would be effective.

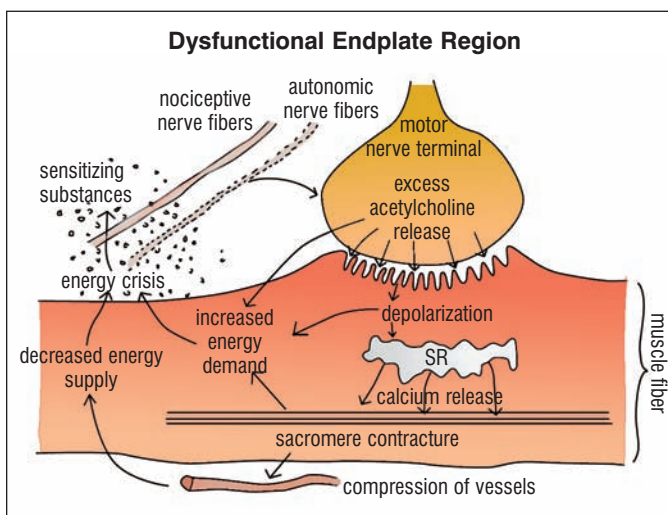
### Myofascial Pain Syndrome vs Fibromyalgia

Myofascial pain syndrome is defined as pain at the site of active trigger points and referred pain to predictable areas along with associated muscle dysfunction. It is a regional syndrome that may involve many regions.<sup>1,2</sup> It is clear to me, based on nearly 20 years experience, that the sympathetic nervous system is involved in the referred pain patterns. In a clinical setting, this can be clearly demonstrated in patients with cervical or thoracic syringomyelia when there is no sympathetic innervations of one arm.

Fibromyalgia, on the other hand, is a very different condition. While, in my experience, all fibromyalgia patients have myofascial pain with associated trigger points, not all myofascial pain patients have fibromyalgia. The fibromyalgia syndrome involves central sensitization at the caudate nuclei of the thalamus in the mid brain. This central sensitization results in widespread allodynia (the perception of pain in response to a normally non-painful stimulus). These patients also demonstrate numerous neuroendocrine abnormalities, primarily involving the hypothalamo-pituitary-adrenal axis. An injury can develop into

a chronic process of either myofascial pain syndrome, fibromyalgia, or CRPS as illustrated in Figure 2.

In the treatment of chronic pain, we all know that the patient's symptom of pain is very subjective. However, trigger points and their referred pain are objective, and can be consistently demonstrated by a trained clinician. What is most important in the treatment of chronic pain is making the proper diagnosis. Without the proper diagnosis, treatments are frequently unsuccessful and may, in fact, lead to a far more complicated problem.



**FIGURE 1.** Illustration of a dysfunctional endplate region. After Travell and Simons.<sup>1,2</sup>

## Trigger Point Inactivation

Trigger point inactivation can be achieved a number of ways. These techniques can include injection, ischemic pressure, acupuncture, heat, stretching, massage therapy, body work, low level laser therapy, as well as the use of microcurrent. For the first 15 years of my practice, trigger point injections were the primary modality in the treatment of myofascial pain—as described in my guest editorial in the October 2006 issue of *Practical Pain Management*.<sup>3</sup> In the past six years, I have gradually begun to use low level laser therapy as the primary modality for inactivating trigger points in my practice. It is extremely important not to just simply inactivate the trigger point and do nothing else. It is very important to use heat and gentle stretching immediately after inactivating the trigger points and having the patient follow up with home stretching and application of heat.

In terms of discussing trigger point injections, there are number of areas that need to be covered:

- Solution makeup
- Tools
- Treatment sequence
- Quantity and frequency
- Post-treatment
- Pitfalls and complications

## Solution Makeup

In my practice, I use a 50-50 solution of 1% lidocaine and 0.9% saline. The fact is that the local anesthetic used is not the most critical item. What one should remember, however, is that bupivacaine and some of the other longer-acting local anesthetics, can have a significant myo-toxic effect. In addition, it is my opinion that steroids should never be used in a trigger point injection. There has never been any evidence that a trigger point is an inflammatory lesion and therefore there is no reason to inject an anti-inflammatory. Additionally, the Depo preparations used can be severely myo-toxic. Likewise, use of epinephrine must be avoided since decreased arteriolar circulation is already present at the site of a trigger point (see Figure 1). As far as the mechanism of a trigger point injection is concerned, it is presumed to involve the depolarization of the taut band to allow increased circulation and a decrease in the “soup “ that has sensitized the nociceptors in the area. The net result should be turning off the pain.

## Tools

While others may disagree, I think it is quite important to use the smallest needle consistent with your ability to reach the trigger point. For most injections, I use a 27-gauge, 1.25-inch needle. This is attached to a 3cc Luer-Lock syringe. This size syringe is easy to hold, manipulate, aspirate (to detect blood or spinal fluid) and inject—all with one hand. For deeper injections, I use a 25-gauge, 2.5-inch needle. Rarely, for a very deep trigger point, I used a 22-gauge, 3-inch needle. The purpose of using small needles is to get a much better feel for the tissue into which you’re placing the needle and, the smaller the needle, the less pain and discomfort the patient will feel. Larger needles are more painful, and can make feeling the taut band and trigger point much more difficult.

## Treatment Sequence

If the upper body is also to be treated at the same visit, trigger

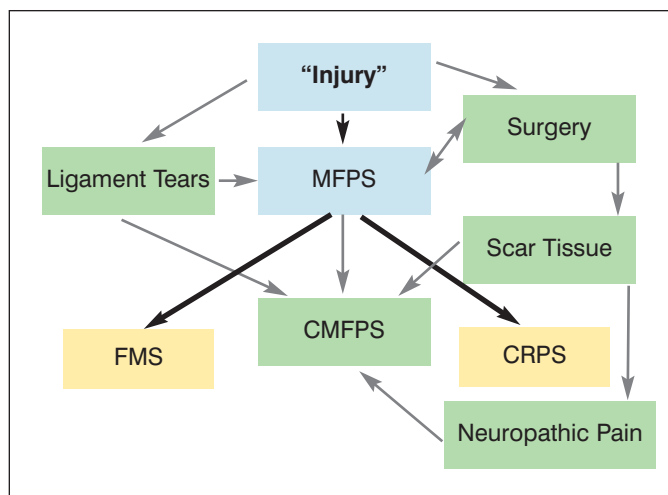


FIGURE 1. Cascade of chronic pain stemming from an injury.

points in the lower portion of the body should be done first. This avoids the tightening of the upper body muscles when the lower body trigger points are injected and thus undoing of your treatment. The iliocostalis lumborum and quadratus lumborum muscles should be treated first, as satellite and secondary trigger points may disappear without treatment. When treating the upper body, the upper trapezius muscles should also be treated first for the same reason (this was a personal communication from Dr. Janet Travell and has proven invaluable over the years).

## Quantity and Frequency

Quantity and frequency is often challenged by the health insurance carriers. My answer, based on the years I spent working with Dr. Travell, is that all active and latent trigger points within any functional unit must be inactivated within the patient’s tolerance. Based on my own 20 years of experience in treating chronic myofascial pain, I conclude that the frequency of injection should be primarily determined by the patient’s medical condition and symptoms and the physician’s judgment—rather than determined by a carrier’s arbitrary limitations.

## Post-Treatment

A concern of the clinician who injects the trigger points—and the patient who receives the injection(s)—is post-injection soreness. This is not noted in all patients but is a fairly frequent occurrence. The major causes of this soreness are (in no particular order):

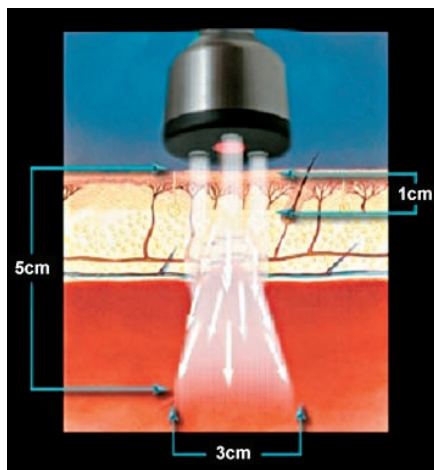
- Not enough heat or stretching post-injection
- Too much of the wrong activities after the injection(s)
- The clinician either missed the trigger point or left a remnant behind
- Significant bleeding at the site of the injection (muscular or subperiosteal) which may be related to the use of a large needle, the patient being on ASA, warfarin, clopidogrel, St. John’s wort, or excess vitamin E
- Post-injection spasm, particularly of the sternocleidomastoid muscle, the external oblique muscle, or the gastrocnemius muscle

Additionally, if there are very active and multiple twitch responses during injection, the soreness—much like after charley horse releases—is often increased. While post-injection soreness is relatively common, it can be minimized by a number of hours

of application of hot packs (at home) as well as gentle stretching.

### Pitfalls and Complications

The clinician must be aware of the pitfalls and complications of trigger point injections. These include persistent pain, scarring (which may occur after bleeding or the use of a steroid), toxicity of the injectate (possible local anesthetic reaction from too much local anesthetic having been injected), as well as a nerve block occurring at the time of trigger point injection. If the clinician knows his/her anatomy, the possibility of a nerve block from the spread of the dilute local anesthetic should be anticipated and the patient warned that this may occur for a short period of time. Of course, one should never inject when a paresthesia is encountered, as significant nerve damage may occur. Obviously, aspiration of the syringe should always be done prior to injection, in order to assure that the injection will not be intra-arterial or subdural. These are of particular concern when injecting trigger points in the neck. Care must be taken to avoid injection into a vertebral artery or into the subarachnoid



**FIGURE 1.** Illustration of infra-red low level laser application to muscle tissue.

space. One of the ways to minimize this is to use short needles having a length that is just adequate to reach the muscles in the neck. While rare, infection is a possibility. To minimize this, avoid injecting too close to any area that may look infected, and use an adequate amount of alcohol that is allowed to dry on the skin.

The patient may also demonstrate persistent pain after the clinician has injected multiple trigger points. This may be due either to the entire trigger point not being inactivated, or the clinician not treating all of the trigger points present. Another potential cause may be that an area of pain in the reference zone was injected — rather than the appropriate trigger point. Another possibility is that the entire target was missed! Another distinct possibility is that the patient has fibromyalgia resulting in persistent pain from that condition even though the myofascial pain component has been inactivated. Lastly,

the clinician may be proceeding to treat the wrong diagnosis!

### Low Level Laser for Inactivating Trigger Points

In my practice, over the past five years, my primary method of inactivating trigger points has become the infra-red low level laser. It is effective, essentially risk free, and less expensive for the patient. In addition, as the energy compounds (cyclic AMP, primarily) produced in the mitochondria and distributed around the cell are increased, the muscle cells will heal faster thus shortening the overall time until symptoms are relieved. The unit I use is illustrated in Figure 3. It has three 30mw laser beams that slightly converge and cover approximately one square centimeter at a depth of 2.5-3.0 centimeters from the skin surface. The unit delivers nine joules/square centimeter over 96 seconds. It is a Class IIIb laser and non-heating to the tissues—unlike a Class IV laser that can burn tissue. Aside from having to wear appropriate glasses to protect the eyes, the unit is otherwise risk-free. ■

*Bernard E. Filner, MD has practiced pain medicine in Rockville, Maryland since 1987. He is certified by the American Board of Anesthesiology and by the American Academy of Pain Management (AAPM). He is a member of the AAPM (and has served on its Technology and Education Committees), the American Pain Society, International Association for the Study of Pain, the American Society of Pain Educators, and the International Myofascial Society. He is on the Board of Advisors of the National Fibromyalgia Partnership, Inc. and the National Fibromyalgia Association.*

*As a clinician specializing in pain management, Dr. Filner has lectured extensively on the treatment of the myofascial pain syndrome and fibromyalgia as well as techniques of trigger point injections—including presentations with Dr. Janet Travell (the Travell Seminars) early in his career. At the present time, Dr. Filner also conducts training courses in the use of the cold laser for pain treatment. Dr. Filner's e-mail address is drfilner@thepaincenter.us.*

### References

1. Travell JG, Simons DG. *Myofascial Pain and Dysfunction: The Trigger Point Manual. Volume 1. 1st Edition.* Williams & Wilkins. Baltimore. 1983.
2. Simons DG, Travell JG, and Simons L. *Travell & Simons' Myofascial Pain and Dysfunction: The Trigger Point Manual, Volume 1. 2nd Edition.* Williams & Wilkins. Baltimore. 1999.
3. Filner BE. Low Level Laser Therapy: A Clinician's View. *Pract Pain Mgmt.* October 2006. 6(7): 34-39.