ISSN: 0975-8585

Research Journal of Pharmaceutical, Biological and Chemical Sciences

# Needling Techniques For Myofascial Pain Syndrome.

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**ABSTRACT**

Myofascial trigger point (MTrP) is a significant reason for muscle torment, portrayed with a hyperirritable spots because of gathering of sharpened nociceptors in a skeletal muscle strands. There are many needling treatment procedures for inactivate the myofascial trigger focuses. It is an endeavor to animate numerous delicate loci in the myofascial trigger guide district toward prompt sharp torment, alluded agony or neighborhood jerk reactions. Contrasting with moderate acting biochemical impacts, neurological impacts can act quicker to give prompt and complete relief from discomfort. In all probability instrument of different needle inclusion treatment for myofascial trigger point (MTrP) inactivation is to experience touchy nociceptors with a high weight incitement of a sharp needle tip to enact a slipping torment inhibitory framework. Needling methods is emphatically suggested for myofascial torment treatment so as to continue patient's ordinary life quickly, in his manner sparing clinical and social assets.

**Keywords:** MPS (Myofascial pain syndrome), MTrP (Myofascial trigger point).

https://doi.org/10.33887/rjpbcs/2020.11.6.15

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ISSN: 0975-8585

## INTRODUCTION

Myofascial pain syndrome (MPS) is generally under analyzed and under treated substance. It is the most well-known reason for musculoskeletal pain portrayed by a myofascial trigger focuses (MTrP) in a tight band of muscle strands, restricted scope of movement in joints, alluded agony and nearby jerk reaction during mechanical incitement of trigger points [.1] MPS is related with pain and muscle solidness, described by presence of hyperirritable tangible knobs in the skeletal muscle filaments, which are named MTrPs. These trigger focuses are the cardinal element of myofascial pain diaorder which are named MTrPs. These trigger focuses are the cardinal element of myofascial torment disorder and consequently it separate from other difficult myofascial pain conditions, for example, provocative myositis, fibromalgia, cluater headache craniomandibular dysfunction.[2] To treat myofascial pain disorder, a strategy called dry needling was presented. Dry needling is old treatment methodology. Sir William Osler, father of present day medication archieved that dry needling has been utilized by doctors since 1820, which is a treatment methodology that is insignificantly[.3]

## ETIOLOGY

The trigger points responsible for the clinical symptoms of MPS are:

- Traumatic events (contusion, whiplash injury, strains and sprains)
- Muscular events ( Radiculopathy, scoliosis, abnormal leg length, rheumatoid athritis, osteoarthritis, athralgia, spondylosis, pelvic torsions)
- Psychological events (anxiety, stress, lack of sleep, excessive or lack of exercise, malposition, emotional stress, use of tobacco)
- Systemic events (vitamin deficiencies, endocrine disorder, menopause syndrome, myocardial ischemia, inflammatory condition such as cholecystitis, appendicitis, gastritis, obesity, hypothyroidism, non angina chest pain) [4]

Precipitating factors are traumas, micro injuries, mechanical injuries, structural degeneration of bones and emotional stress. Endocrine deficiency, nutritional deficiency, bad posture and working environment are perpetuating factors

## TRIGGER POINT

MTrPs can be classified into four types

1. ACTIVE TRIGGER POINT: These trigger points are knobs inside a rigid band of muscle. They are normally the wellspring of solid torment. They are extremely delicate, cause alluded pain and produce a jerk when contacted.
2. LATENT TRIGGER POINT: These knobs don't cause pain when contacted . They can stay lethargic for quite a long time and become dynamic when there is stress or trauma.[5]
3. SECONDARY TRIGGER POINT: It is a difficult point in the muscle, becomes dynamic when you stress another muscle
4. SATELLITE MYOFASCIAL POINT: This is an agonizing spot that becomes dynamic since its situated close to another trigger point.

However many aspects of TrP etiology remain unclear. Huang et al in 2013 observed number of contracture hitches assembled in longitudinal part of myofascial trigger focuses and furthermore affirmed the suspicion of Simons et al in 1990 with respect to the theoretical sketch of contracture bunches of myofascial trigger focuses .[6] There are many experimental studies performed by using molecular biological and/or histopathological analysis . However, owing to the conflicting results of these studies, the mechanism remain inconclusive. Gerwin et al, 2004 Considered that TrP might be pathological but reversible condition in the affected muscle bundle, the invasiveness of abovementioned methods might affects the results. It may cause excessive secretion of acetylcholine at the motor end plate and prolonged muscle contraction subsequently

leading to localized ischemia and accumulated the vascular and neuroactive substances in musclefibre bundle, thus evoking muscular pain.[7]

**DIAGNOSIS**

Proper history and physical examination are more helpful for diagnosis and management.

Travel and Simon described the characteristics symptoms of myofascial pain syndrome:

- Limited range of motion in muscle involved
- Weakness of muscle involved
- Patient recognize referred pain when applying pressure on trigger point region
- Tenderness

Needle electromyography, surface electromyography, Infra red spectroscopy, Magnetic resonance elastography, these are the experimental methods used to identify the myofacial trigger point. Plain radiographs, computed tomography (CT), magnetic resonance imaging (MRI) and sonography are also used to identify the cause of myofascial pain syndrome. [8] For clinical assessment of myofascial pain syndrome patient, jaw tracking and occlusal analysis are important factor. Now a days, T-scan (computerized occlusal analysis) has greater value for diagnosing the myofascial pain syndrome.

According to R.Bennett, the characterized symptoms are:

- Tenderness to palpation of muscle
- Restricted mouth opening
- Referred pain occur (when applying pressure for 5 seconds in trigger point region)
- Pseudo weakness of muscle [9]

Observations help to diagnose myofacial trigger points are:

- Visual identification of local twitch response
- Pain on compression of tender nodule
- Local twitch response is observed when needle is penetrated.

Han and Harrison in 1997, described the difference between the myofascial pain and fibromyalgia syndrome. Localized pain and trigger point with taut band are seen in myofascial pain syndrome whereas it is contrary in case of fibromyalgia, associated with poor sleep. [10]

**TREATMENT**

The surgical techniques for treating myofascial pain syndrome are Dry needling, wet needling, multiple rapid insertion and acupuncture. Non surgical methods are exercise, massage, ultrasound therapy, muscle relaxants etc.

**PHARMACOLOGICAL TREATMENT**

**Non steroidal Antiinflammatory drugs**

NSAID are more often part of treatment because they have both analgesic and anti inflammatory effect. They are promptly accessible and have sensible result (Yousif et al, 2020). The clinician ought to ask about recurrence of patient utilize and prompt on normal results. The long utilization of these drugs results in gastrointestinal ulcer, renal and antiplatelet effect.[11]

**MUSCLE RELAXANT**

Certain drugs like cyclobenzaprine (Trade Name: Amrix, 5mg) and Tizanidine (Trade Name: Zanaflex, 2-4 mg) are alpha 2 adrenergic agonist which decreases the muscle stiffness. Tizanidine decreases the pain intensity and improves the muscle function. Clonazepam and diazepam are benzodiazepine derivatives, are also called as a muscle relaxant in the treatment of MPS. Turturro et al 2003, compared cyclobenzeprine + ibuprofen versus placebo + ibuprofen in patients with acute myofascial pain. This study indicated that cyclobenzaprine has no great impact in the treatment of myofascial pain syndrome.[12]

**PHYSICAL THERAPY**

In ultrasound therapy, sound waves are transmitted to the tissues to heal the scars and improves the circulation. Ay et al.2011 , evaluated the effectiveness of phonophoresis and ultrasound in myofascial pain syndrome. He concluded that there is no different of both techniques in management. Lower level laser therapy is used in many musculoskeletal pain diseases. It reduces the pain inflammation by using red and infrared light. Electronic Digital Algometer was used to detect the trigger points and pressure transducer probe was used to determining the sensitivity of trigger points.[13]Ozdemir et al guarantee that the laser radiation provides analgesia by decreasing the muscle spasm. Effect of pain control and endorphin levels are the mechanisms that may cause analgesia in laser therapy . Gur et al concluded that short period application of low level laser therapy is more effective in pain relief and improves the quality of life in patients. [14]

**NEEDLING TECHNIQUES**

**Acupuncture**

Acupuncture is usually performed with needles as electrodes, which gives more relief from discomfort and improved the actual capacity. A few clinical inquiries regarding needle therapy that are unanswered including number of needles utilized, length of impact and system by which it creates an antinociceptive impact. Most commonly utilized needle ia metal filiform (string like) needle that is produced using hardened steel, incidentally silver or gold needle are utilized.

Acupuncture can be given by two methods –

SUPERFICIAL ACUPUNCTURE: Needles are completely inserted perpendicularly into the skin with the profoundity of 2.5mm and left set up for 20 minutes.

TRADITIONAL ACUPUNCTURE: Needles are embedded perpendicularly into the skin at each trigger point and removed a few times in each tight band. It is finished by utilizing pistoning needle therapy strategies. The needles are embedded with afitting profundity of 1 cm for 20minutes.[15]

ELECTRO ACUPUNCTURE: The electric current passes between needles during treatment generally applies more stimulation to acupoints than other hand manipulation techniques. Once the needle is inserted the clinician will use electrode to connect the needles to a electroacupunture machine. Electro acupuncture machine have adjustable current and voltage settings. This technique last between 10 and 20 minutes, which is less than other acupuncture techniques.[16]

Rong Wang et al, 2017 led an overview to survey and look at the adequacy and security of various strategies of needle therapy for MPS. The examination proof recommends that, acupuncture joined with different treatments, are more powerful in diminishing pain and in improving the actual function.[17]Chao Ching wang et al, 2018 propose that shallow needle therapy is less difficult and has insignificant unfriendly impacts when contrasted with traditional acupuncture.[15]

**Dry needling**

Dry needling is used by physical therapist to treat myofascial pain syndrome. In this method, dry needle is utilized without prescription or infusion, embedded into the zones of muscle(trigger point).

G.V. Murali Gopika Manoharan, 2019 led an investigation on 20 patient to assess the adequacy of dry needling in MPS by estimating the pre and post treatment agony and improvement in mouth opening after dry needling. Study expressed that dry needling demonstrated better adequacy and wellbeing in lessening pain, improving greatest mouth opening in patients with chronic myofascial pain syndrome.[18]

**INDICATIONS**

Dry needling technique is used for treating cervical spine and sacrum disorders, tension headache, upper body quadrant disorder, painful shoulder syndrome, fibromyalgia and other disoders induced by trigger points.

Sukumar Shanmugam and Laurence Mathias in 2017, describes a case of 49 years old patient undergoing dry needling treatment for 5 weeks for a headache caused by cervical spine disorder. After 5 weeks the stability in the cervical region and mobility of cervical spine has been improved and apparently pain is relived. After 24 months, the quality of life was significantly improved.[19]

An ideal candidate for DN should posses the following qualities:

1. Capable to understand why it is being done and what is done
2. Skill to communicate their own response according to the treatment
3. Ability to provide informed consent according to clinical guideness.

**PROCEDURE**

STEP 1: Positions may include supine, prone or side lying. Persistent situating is finished utilizing pads and supports. The professional would have the option to see the patients face to get customery input during the treatment.
STEP 2: Casey unverzagt et al, 2015 states that current principled of care in United States suggested settinh up the skin with 70% isopropyl liquor before needling, too the specialist using gloves during treatment.
STEP 3: The trigger point is recognized utilizing palpation strategy. A pincer grip method is utilized to tenderly lift the skin
STEP 4: A high quality, sterile, strong fiber needle is embedded legitimately through the skin.

The gauge and length of the needles;

- 0.30 × 50 mm needle is appropriate for most muscles
- 0.20 × 25 mm for the forearm
- 0.14 × 25 mm for the face /head
- 0.12 × 25 mm for hands and feet

STEP 5: when the needle is entered and embedded into the muscle, the specialist may use a moderate, consistent, spearing or pistoning movement all through the muscle. This technique is named as dynamic needling.

Other techniques are

- The practitioner may leave the needle in situ, termed as static needling
- The fascia or soft tissue is drawn by rotating the needle in several rotation

STEP 6: After the needle is withdrawn, the tissue should be compressed for 30-60 seconds using a cotton swab, this will help to ensure adequate hemostasis.[20]

Trained clinician should be aware of the pathway or trajectory of the needle which is inserted into the patient's body. Now and again, the specialist will be not able to inspire a jerk reaction, while treating profound musculature. Regularly with these more profound muscles, if the needles are left set up for 5-10 minutes with or without intramuscular electric stimulation (IES). If the superficial muscle doesn't elicit a twitch response,

then the practicioner has to use more dynamic needling technique or repeat the lancing motion. If twitch isn't elicited, then second attempt is made by withdrawing the needle .

Casey unverzagt et al, 2015 supposition that jerk isn't evoked after the subsequent needle is embedded, the specialist might not have effectively touch the trigger point or the trigger point with IES so as to draw in it.[21]

**WET NEEDLING**

This technique can be approached by two methods. In first method, once the trigger point with pain are elicted 0.1ml to 0.2ml of local anesthetics is injected to relieve the pain. It is utilized for both intense or constant agony of MTrPs. In second technique, 0.3ml to 0.5ml is infused into the area of trigger to permit the sedatives to penetrate the area of the MTrPs. This strategy is utilized for persistent with excessively touchy and incapable to endure a needling pain.[22]

**Multiple rapid needle techniques**

Multiple needle insertion technique was initially evolved by Travell. The needle ought to be moved in and out into various headings to experience the trigger point district. It totally disposes of the torment following various infusions is given alongside a nearby sedative agents. Hong incorporates an extraordinary method of holding a needle and the insult band and weakness by utilizing a finger of non- prevailing hand. Cautious palpation will lessens number of needle infiltration to keep away from extreme draining and muscle fiber damage.[23]

**Modification of multiple rapid needling techniques**

In acupuncture therapy needle is more modest in size and it is hard to apply in trigger point locale with quick needle development. Chou et al in 2008 built up another procedure of needle therapy treatment. This strategy is like the dry needling by addition of needle into different loci of trigger point district with quick inclusion speed. It is utilized to give high-pressure incitement to touchy loci, all the while turn of needle assists fast needle development. This strategy was initially evolved to inactivate the MTrPS in upper trapezius following the guideline of acupuncture.[23]

**Mini scalpel needle therapy**

This treatment is exceptionally famous and more successful in china. MSN treatment consolidates microvasive medical procedure with needle therapy. This methodology is utilized to cut the thickening structures in the area of MTrPs to loosen up packed nerves and vessels to improve microcirculation. MSN treatment has been accounted for to furnish more prominent relief from discomfort in patients with in cervical myofascial torment disorder with no extreme results. As of late ultrasonic direction has been appeared to upgrade the precision of needle position and improve the exhibition of MSN effectively.[24]

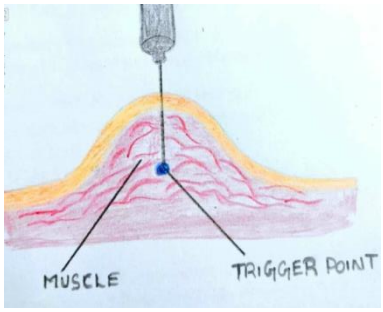


**Figure 1: Structural graphic of myofascial trigger point**

ISSN: 0975-8585

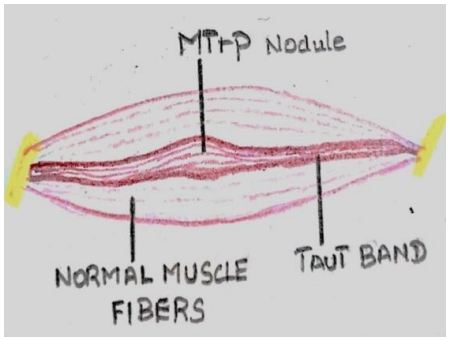


**Figure 2: Superficial acupuncture**

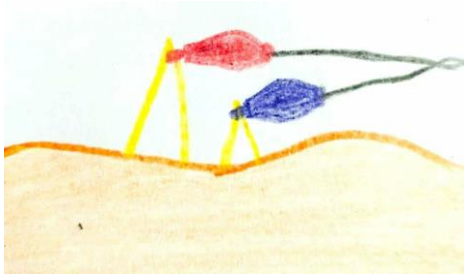

**Figure 3: Electroaccupuncture**

## CONCLUSION

Myofascial pain syndrome is a musculoskeletal disorder with prevalence of 80% to 95% of mobidity. The proper treatment for MPS depends on identification of etiology factor. The therapist should decides the treatment according to the diagnosis. Needling therapies shows better efficacy when comparing to other treatments. Needling therapies results in immediate inactivation of trigger points due to its high pressure stimulation. Needling therapy is unequivocally suggested for myofascial torment condition so as to continue patients typical life quickly, in this way sparing clinical and social resource.[23] As active recuperation pushes ahead as a calling, advisors must have option to participate in proficient discussions with two partners and foes, so as to lift the norm of care, in a progressing endeavor to improve persistent outcomes.[21]

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