

Advances in the management of myofascial pain dysfunction syndrome - A short review

S. Pooja¹, D. Pradeep²

ABSTRACT

The aim of this article is to survey the present patterns in administration of myofascial pain. The objective is to look at the assortment of treatment for myofascial pain syndrome (MPS). Myofascial pain disorder (MPS) is characterized as pain that starts from myofascial trigger focuses in skeletal muscle. Basic etiologies of myofascial pain dysfunction might be from immediate or aberrant injury, spine pathology, presentation to total and tedious strain, postural brokenness, and physical deconditioning of transcutaneous electrical nerve incitement which diminishes the strong movement consequently wipes out the basic reason for sickness and giving an authoritative treatment to the patient with myofascial pain dysfunction syndrome. Hence, the fitting assessment and administration of myofascial pain is more critical. The motivation behind this survey is to give the clinician a complete and breakthrough comprehension of the present medications and current treatment for MPS.

KEY WORDS: Aberrant injury, Alluded pain, Myofascial, Transcutaneous, Trigger focuses

INTRODUCTION

Myofascial pain syndrome (MPS) is a muscular pain disorder that emerges from an essential brokenness in muscle and is related with focal sharpening and a segmental spread inside the spinal string to offer referred pain that is felt at a separation.^[1] The traditional meaning of MPS is characterized by regional pain starting from hyperirritable spots situated inside rigid groups of skeletal muscle, known as myofascial trigger focuses (MTrPs).^[2] Myofascial pain dysfunction syndrome (MPDS) is also a psychological disorder which involves the masticatory muscles and results in pain, limits jaw movement, joint noise, jaw deviation in closing and opening the mouth, and sensitivity in touching one or more masticatory muscles or their tendons.^[3] It is either alone or combined with other pain generators and more prevalent with regional musculoskeletal pain syndromes.^[4] Myofascial pain disorder is gathering of the tactile, engine, and autonomic side effects that incorporate nearby and alluded pain, diminished scope of movement,

and shortcoming.^[5] Hence, this article reviews the advances in the management of MPDS.

ETIOLOGY OF MPDS

MPDS has a multifactorial etiology. The most common etiology of MPDS are direct or indirect trauma, spine pathology, exposure to cumulative and repetitive strain, postural dysfunction, and physical deconditioning.^[6] Several authors maintain that inadequate dentition and unsatisfactory occlusion are the most frequent causes of MPDS.^[7] Etiology of MPDS can be divided into predisposing factors, precipitating factors, and perpetuating factors.

Predisposing Factors^[8]

1. Structural discrepancy of mastication system.
2. Physiologic disorders such as neurologic, vascular, and nutritional.
3. Systemic diseases and infections, neoplasias, and orthopedic imbalances.
4. Noxious habits such as bruxism and tooth clenching.

Precipitating Factors^[9]

1. Trauma.
2. Stress.
3. Iatrogenic and idiopathic factors.

Access this article online

Website: jprsolutions.info

ISSN: 0975-7619

¹Saveetha Dental College, Saveetha Institute of Medical and Technical Sciences, Saveetha University, Chennai, Tamil Nadu, India, ²Department of Oral and Maxillofacial Surgery, Saveetha Dental College, Saveetha Institute of Medical and Technical Sciences, Saveetha University, Chennai, Tamil Nadu, India

*Corresponding author: Dr. D. Pradeep, Department of Oral and Maxillofacial Surgery, Saveetha Institute of Medical and Technical Sciences, Saveetha University, 162 Poonamallee High Road, Chennai - 600 077, Tamil Nadu, India. Phone: +91-9789936383. E-mail: pradeep.dhasa@gmail.com

Received on: 14-11-2018; Revised on: 27-12-2018; Accepted on: 22-01-2019

Perpetuating Factors^[10]

1. Dental factors.
2. Muscle fatigue due to parafunctional habits.
3. Micro- or macro-muscular trauma.
4. Class 2 skeletal discrepancies.
5. Antihypertensives such as calcium channel blockers.
6. Increased emotional tension.
7. Endocrine problems.
8. Sleep disorders.
9. Nutritional deficiencies.
10. Viral infections.

PATHOPHYSIOLOGY

1. Injury to muscle fiber Type I.
2. Metabolic distress at the motor end plates.
3. Activation of muscle nociceptors.
4. Transmission of pain to the central nervous system (CNS).

The pathophysiology of MPS is currently hypothesized that trigger points (TrPs), the most common feature of MPS, contain areas of sensitized low threshold nociceptors (free nerve endings) with dysfunctional motor end plates. These motor end plates connect to a group of sensitized sensory neurons in charge of transmitting pain information from the spinal cord to the brain.^[11] Knowing the potential reasons for TrPs is vital to keep their advancement and repeat, yet in addition to inactivate and dispense with existing TrPs. There is general understanding that any sort of muscle abuse or direct injury to the muscle can prompt the advancement of TrPs. Muscle overburden is believed to be the aftereffect of:

- Sustained Low-Level contractions and intramuscular pressure.
- Dynamic concentric contractions.
- Cinderella hypothesis.
- Maximal or submaximal concentric contractions.
- Eccentric contractions.
- Modification of central nociceptive input.^[12]

CLINICAL PRESENTATION OF MPDS

Women's are more affected by MPDS than men, ranging from 3:1 to 5:1. The incidence appears to be among the age group of 20–40 years of age. The patient usually present with the complaint of pain in a zone of reference, TrPs in muscles, taut muscle band, limited jaw opening, associated symptoms, presence of contributing factors for onset of pain, and no tenderness in temporomandibular joint (TMJ).^[13] Patient may complain of sudden onset of pain and trismus during biting on a hard object, overstretching of jaws, and difficult tooth extraction. Gradual onset characterized by the appearance of abnormal sounds in the joint followed by pain and limited jaw opening.^[14] A TrPs is defined as a localized tender area in a taut band of skeletal muscle,

tendon, or ligaments. Myofascial pain is characterized by pain referred from few hypersensitive areas which are known as the trigger zones. Trigger focuses are small tender areas, which cause referred pain to a distant region called the referred pain zone. They are activated by pressure, movement, change of barometric pressure and tension, be it physical or emotional. These trigger zones usually occur in head, neck, shoulder, and lower back.^[15] Pain associated with MPDS is always unilateral. If it is bilateral, then it is not symmetrical.^[16]

SIGNS AND SYMPTOMS OF MPDS

- TMJ sounds.
- Impaired or irregular mandibular movement.
- Limitation in mouth opening.
- Preauricular pain.
- Fascial pain.
- Headaches.
- Jaw tenderness on function.^[17]

DIAGNOSIS OF MPDS

Clinical highlights are the most common approach to analyze MPDS. Different examinations incorporate radiological imaging. Ultrasonography has ended up being helpful in concentrate the state of the muscles. Muscle action can be researched by electromyography. Intra-oral and extra-oral radiographs is used for assessing the TMJ and palpation of TMJ.^[18]

MANAGEMENT OF MPDS

Most of the TMDs are self-limiting. Conservative management such as self-care practices and rehabilitations which are to relieve muscle spasms. NSAIDs are for short-term basis. Various modalities include patient education, medication, physical therapy, splints, psychological counseling, relaxation techniques, biofeedback, hypnotherapy, acupuncture, and arthrocentesis.^[19]

The treatment modalities of MPDS are broadly classified in non-surgical and surgical treatment.

NON-SURGICAL THERAPY**Initial Therapy****Reassurance**

Explanation to the patient about the nature and prognosis of the disorder and to reassure the patient about the treatment.^[20]

Diet

Diet plays a very major role in the management of MPDS. Hard and sticky food should be eliminated from patient's diet to prevent the stress or strain over the masticatory muscles. The patient should be put on soft and liquid diet.

Rest

Every patient ought to be made mindful of the connection among stress and muscle strain. Resting the jaw is possible by making the patient aware of their unconscious postural, swallowing, clenching, or grinding habits.^[21]

Thermotherapy

Surface warmth is connected by laying a hot clammy towel, electric warming cushion over the symptomatic region. This blend ought to stay set up for 10–15 min.^[22]

Pharmacological therapy

Pharmacological treatment includes the use of various drugs to reduce the pain and discomfort caused to the patient.

Analgesics

Opioid and non-opioid analgesics are used depending on the degree of pain. The opioid analgesics act on the CNS and induce sleep, whereas non-opioid analgesics like NSAIDs do not interact with CNS and help in reducing mild-to-moderate pain.^[23]

ANTI-INFLAMMATORY AGENTS

Generally utilized are salicylates (headache medicine), propionic acid (ibuprofen), acidic corrosive (indomethacin), fenamic corrosive, oxicam, aryl-acidic corrosive derivatives (diclofenac sodium).

Anxiolytics Agents

Benzodiazepines such as alprazolam, diazepam, lorazepam, and oxazepam are commonly used to alter the patient's perception or reaction to the supportive therapy.^[24]

Muscle Relaxants

Muscle relaxants Commonly used are carisoprodol, chlorzoxazone, meprobamate, methocarbamol, and cyclobenzaprine.

Local Anesthetics

It reduces the pain immediately, thus providing relief to the patient allowing complete muscular movement. Apart from therapeutic, it also acts like a diagnostic tool. Once the area is anesthetized, it is easy to diagnose the trigger zone and its radiating path.

Herbal Medicines

Lavender, lemon balm, rosemary, kava kava, and skullcap are some of the recommended medicines.^[25]

Infrared Rays

Infrared rays have a synergistic effect on the muscle. It increases the blood flow and induces mild anti-

inflammatory reactions mediated through the histamine and prostaglandin promoting vasodilatation, changing enzymatic activity, and metabolic rate.

Occlusal Therapy

Even small occlusal disturbance can lead to the pain in the muscles and joints. Occlusal splints are given to the patient to relieve the occlusal disharmony. Occlusal therapy Provides equal contact of all teeth, hence, providing an equal load distribution on all the teeth and prevents the jaws from adverse mechanism of bruxism, clenching, and other habits. The various appliances used are bite planes, occlusal appliance, night guard, and mouth guards.^[26]

Physical therapy includes: Electro galvanic stimulation (EGS) trans cutaneous stimulation.

EGS

An electrical motivation is connected to the muscle, making rehashed automatic constriction and relaxations. This expands bloodstream to the muscles.

Transcutaneous stimulations

Transcutaneous electrical nerve stimulation activates the A-delta fibers and prevents pain from C-delta fibers using an electric current.^[27]

Other modalities**Dry needling**

It acts as a therapeutic agent to release the intracellular potassium to block nerve conduction temporarily.

Stripping massage

It is a specific stroking massage on the skin to lubricate the muscle by putting the digital pressure on the muscle in milking motion. The pressure is light on the first pass, hence, increasing gradually to reduce the bumpiness in the muscle.

Acupuncture

It is body's own antinociceptive mechanism to reduce the level of pain. Stimulation of acupuncture areas causes release of endorphin molecules by blocking the transmission of noxious impulses, hence, reducing the pain sensation.^[28]

SURGICAL MANAGEMENT

Many patients get relieve from the conservative therapy; therefore, surgery is considered to be the last resort such as condylotomy, meninscectomy, myotomy, and arthroscopy.

Condylotomy

It is a deliberate displacement of the head of the condyle. Its central legitimacy is that the joint case

and intracapsular structures stay undisturbed.

High Condylectomy

It is a careful decrease of the height of the condylar head and end of the condylar articular pathology, in this way diminishing the determined disturbance and weight of the nerve supply to joint. It is shown just when all the preservationist types of treatment have fizzled.

Meniscectomy

It is the expulsion of the articular plate from the TMJ. It is best viewed as when genuine horrendous harm to the plate is available.

Myotomy

Chosen myotomy of the masseter or temporalis muscle by means of an intraoral approach is advantageous.

Arthroscopy

It includes lysis and lavage techniques resulting in increased range of motion, improvement of joint function, and reduction of pain.^[29]

OTHER RECENT TRENDS IN THE MANAGEMENT OF MPDS

Botulinum Toxin A Injections

This strategy has been utilized effectively to treat both over the top grasping and repetitive TMJ disengagement. Injection of BTX-A in the masseter and temporalis muscle fibers extraorally under electromyography guidance serves to prove effective in 9 of 10 patients. These muscles are most commonly involved and radiate the pain to ear and temporal headache, respectively, which lead to the limitation of the mandibular motion and develop MPDS.^[30]

Ultrasound

Ultrasound therapy uses the transmission of the sound waves through conducting gel into the tissue leads to the breakdown of scar tissue. It increases the cell membrane permeability by altering the sodium-potassium ion gradient. It increases the exchange of gases, which promotes healing and reduces inflammation.

Iontophoresis

It is a procedure of passing low amperage current to the tissue of the area involved. A pad is placed over the skin of patient and electric current is passed through it into the tissue.

Cold and Soft Laser Therapy

Application of the low-level laser therapy has been sought to promote healing, reduce inflammation. It accelerates collagen synthesis, increases vascularity,

and decreases the number of microorganism and pain.^[31]

CONCLUSION

The successful management of patients with MPDS is dependent on establishing an accurate diagnosis and using proper therapy based on the etiology of disorder. The patient should be counseled and trained well with jaw exercises. The best possible treatment of MPS might be a standout amongst the most fulfilling whenever took care of accurately. Of the modalities explored, dry needling and TrPs infusions are the pillar of interventional treatment. Various examinations bolster their utilization; however, manageability is likely founded on utilizing these treatments sensibly and related to manual treatments, for example, myofascial discharge. More up to date treatments, for example, ultrasound and laser treatment, demonstrate guarantee.

REFERENCES

- Berglund B, Harju EL, Kosek E, Lindblom U. Quantitative and qualitative perceptual analysis of cold dysesthesia and hyperalgesia in fibromyalgia. *Pain* 2002;96:177-87.
- Leite FM, Atallah AN, El Dib R, Grossmann E, Januzzi E, Andriolo RB, *et al.* Cyclobenzaprine for the treatment of myofascial pain in adults. *Cochrane Database Syst Rev* 2009;3:CD006830.
- Sherman JJ, Turk DC. Nonpharmacologic approaches to the management of myofascial temporomandibular disorders. *Curr Pain Headache Rep* 2001;5:421-31.
- Desai MJ, Saini V, Saini S. Myofascial pain syndrome: A treatment review. *Pain Ther* 2013;2:21-36.
- Gerber LH, Sikdar S, Armstrong K, Diao G, Heimur J, Kopecky J, *et al.* A systematic comparison between subjects with no pain and pain associated with active myofascial trigger points. *PM R* 2013;5:931-8.
- Wheeler AH, Aaron GW. Muscle pain due to injury. *Curr Pain Headache Rep* 2001;5:441-6.
- Saxena A, Chansoria M, Tomar G, Kumar A. Myofascial pain syndrome: An overview. *J Pain Palliat Care Pharmacother* 2015;29:16-21.
- Jain S. Myofascial pain dysfunction syndrome. *Heal Talk* 2013;5:12-6.
- Gupta DS. Myofascial pain dysfunction syndrome an overview. *Heal Talk* 2013;5:12-6.
- Gupta DS. Myofascial pain dysfunction syndrome an overview. *Heal Talk* 2013;5:12-6.
- Bron C, Jan D. Dommerholt etiology of myofascial trigger points. *Curr Pain Headache Rep* 2012;16:439-44.
- Laskin DM, Block S. Diagnosis and treatment of myofascial pain-dysfunction (MPD) syndrome. *J Prosthet Dent* 1986;56:75-84.
- Patel R, Arora H, Sharma U. Myofascial pain dysfunction syndrome. *IJ Pre Clin Dent Res* 2015;2:38-43.
- Shukla D, Muthusekhar MR. Efficacy of low-level laser therapy in temporomandibular disorders: A systematic review. *Natl J Maxillofac Surg* 2016;7:62-6.
- Odendall CL. The Management of Myofascial Pain Syndrome. *S Afr J Anaesthesia Analg* 2003;9:19.
- Perry HT Jr. The symptomology of temporomandibular joint disturbance. *J Prosthet Dent* 1968;19:288-98.
- Hong CZ. Myofascial trigger point injection. *Crit Rev Phys Rehabil Med* 1993;5:203-17.
- Yap EC. Myofascial pain an overview. *Ann Acad Med*

- Singapore 2007;36:43-8.
19. Nel H. Myofascial pain dysfunction syndrome. *J Prosthet Dent* 1978;40:438-41.
 20. Arora P, Goswami R, Raman S, Jain P. The enigma of myofascial pain dysfunction syndrome. *Int J Adv Sci Res* 2015;1:1-4.
 21. Dokwal SK, Soni T, Bhagat A. Role of oral physician in treating myofascial pain dysfunction syndrome a review. *Int J Res Health Allied Sci* 2017;3:77-8.
 22. Perry HT Jr. The symptomology of temporomandibular joint disturbance. *J Prosthet Dent* 1968;19:288-98.
 23. Hou CR, Tsai LC, Cheng KF, Chung KC, Hong CZ. Immediate effects of various physical therapeutic modalities on cervical myofascial pain and trigger-point sensitivity. *Arch Phys Med Rehabil* 2002;83:1406-14.
 24. Gerwin RD, Dommerholt J. Treatment of myofascial pain syn-42. In: Boswell MV, Cole BE, editors. *Weiner's Pain Manage-Ment: A Practical Guide for Clinicians*. Boca Raton, FL: CRC Press; 2006. p. 477-92.
 25. Fomby EW, Mellion MB. Identifying and treating myofascial pain syndrome. *Phys Sportsmed* 1997;25:67-75.
 26. Al-Ani Z, Gray RJ, Davies SJ, Sloan P, Glenny AM. Stabilization splint therapy for the treatment of temporomandibular myofascial pain: A systematic review. *J Dent Educ* 2005;69:1242-50.
 27. Esposito CJ, Shay JS, Morgan B. Electronic dental anesthesia: A pilot study. *Quintessence Int* 1993;24:167-70.
 28. Garg A, Toy S, Tripodis Y, Silverstein M, Freeman E. Addressing social determinants of health at well child care visits: a cluster RCT. *Pediatrics* 2015.
 29. Lindfors E, Tegelberg Å, Magnusson T, Ernberg M. Treatment of temporomandibular disorders knowledge, attitudes and clinical experience among general practising dentists in sweden. *Acta Odontol Scand* 2016;74:460-5.
 30. Okeson JP. *Management of Temporomandibular Disorders and Occlusion*. 6th ed. St Louis: Mosby Inc.; 2008.
 31. Costen JB. A syndrome of ear and sinus symptoms dependent upon disturbed function of the temporomandibular joint 1934. *Ann Otol Rhinol Laryngol* 1997;106:805-19.

Source of support: Nil; Conflict of interest: None Declared