The effect of muscle relaxant splint versus the intramuscular injection of local anesthesia in management of myofascial pain dysfunction syndrome

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To my mother

and

The sole of my father

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Introduction

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Temporomandibular disorder (TMD) is a collective term representing a broad spectrum of clinical joint and muscle problems in the oro-facial area. These disorders are characterized by pain, joint sounds and irregular or limited jaw function. Myofacial pain syndrome (MPS) is a common painful disorder responsible for many pain clinic visits. MPS can affect any skeletal muscles in the body and it is responsible for many cases of chronic musculoskeletal pain.

Clinical examination, radiographic evaluation, magnetic resonance imaging, ultrasonography and electromyography can be used alone or in combinations for the diagnosis and assessment of improvement of the condition of the patient suffering from any TMD.

Many treatment modalities were introduced to manage the patients suffering from MP. Noninvasive procedures include dietary modifications, pharmacotherapy, physical therapy, occlusal appliance therapy and stress reduction techniques. Intramuscular injection utilizing saline, anesthetic agent, corticosteroids and even dry needle are also introduced for the treatment of MP.

About 23 million persons, or 10% of the U.S. population, have one or more chronic disorder of the musculoskeletal system. Musculoskeletal disorders are the main cause of disability in the working-age population and are the leading causes of disability in other age groups. [1]

Functional disturbances of the masticatory system have been identified by a variety of terms. Descriptions of myofascial pain date back to the mid 1800s when ***Froriep*** described "*Muskelschwiele*" or muscle calluses. He described these calluses as tender area in muscle that felt like a cord or band associated with rheumatic complaints. In the early 1900s, ***Gowers*** first used the term *"Fibrositis"* to describe muscular rheumatism associated with local tenderness and regions of palpable hardness. [2]

In 1934, ***Costen*** [3] described a group of symptoms that centered around the ears and temporomandibular joints. The term *"Costen Syndrome"* referred to pain in or near the ear, tinnitus, dizziness, sensation of air pressure and difficulty in swallowing.

In 1938, ***Kellgren*** [2] described areas of referred pain associated with tender points in muscle. In the 1940s, ***Janet Travell***, began writing about myofascial trigger points. Her text, written in conjunction with ***David Simions***, continues to be viewed as the foundational literature on the subject of myofascial pain. [2]

In 1959, ***Shore*** [4] introduced the term "*Teporomandibular Joint Dysfunction Syndrome"* to describe the previously mentioned Costen symptoms. In 1969, ***Laskin*** [4] utilized the term "*Myofascial pain Dysfunction Syndrome"* to describe painful condition of the skeletal muscles involving mostly the masticatory muscles as well as muscles of the neck and shoulders.

Ramfjord and Ash [5] in 1971 used the term *"Functional Temporomandibular Joint disturbances"*. Both ***Gerber*** [6] in 1971 and ***Graber*** [7] in 1979 used the term *"Occluso-Mandibular Disturbances"*, *"Myoarthropathy of the Temporomandibular Joint"* subsequently to emphasis the occlusal disharmony as the primary etiologic factor.

In 1980, ***McNeill et al*** [8] used the term *"Cranio-Mandibular Disorders"* as they believed that the previously mentioned terms are too limited; because the symptoms are not always isolated to the temporomandibular joints.

Myofascial pain syndrome is a common painful muscle disorder caused by myofascial trigger points. [9] Trigger points are discrete, focal, hyperirritable spots located in a taut band of skeletal muscle. The spots are painful on compression and can produce referred pain, referred tenderness, motor dysfunction, and autonomic phenomena. [10]

There are many definitions describing myofascial trigger points (TrP). ***Travell and Simond*** [11] in 1983 defined the trigger points (TrPs) as “Hyperirritable spot, usually within a taut band of skeletal muscle or in the muscle fascia. The spot is painful on compression and give rise to characterstic referred pain, tenderness and autonomic phenomena".

In 1991, ***Maigne and Maigne*** [12] defined it as “Maximal tenderness, where pressure reproduces actual pain". ***Nice et al*** [13] in 1992 referred these TrPs to " Hyperirritable area in soft tissue that, when palpated by the examiner, produces a predictable pattern of pain.

In 1995, ***Schneider*** [14] described it as "Hyperirritable spots located within a taut band of skeletal muscle that are painful upon compression and give rise to characteristic referred pain and autonomic phenomena".

In 1997 ***Dringber*** [15] described TrPs as "Hyperirritable bundles of fibers within a muscle which becomes knotted and inelastic, unable to contract or relax, due to an injury" and ***Hong et al*** [16] described it as "Hyperirritable spot in a palpable taut band of skeletal muscle fibers".

TrPs are classified as being active or latent, depending on their clinical characteristics. [17] An active trigger point causes pain at rest. It is tender to palpation with a referred pain pattern that is similar to the patient's pain complaint. [9, 17, 18] This referred pain is felt not at the site of the trigger-point origin, but remote from it. The pain is often described as spreading or radiating. [19] Referred pain is an important characteristic of a trigger point. It differentiates a trigger point from a tender point, which is associated with the pain at the site of palpation only. [20]

A latent TrP does not cause spontaneous pain, but may restrict movement or cause muscle weakness. [18] The patient presenting with muscle restriction or weakness may become aware of pain originating from a latent TrP only when pressure is applied directly over the point. [21] Moreover, when firm pressure is applied over the TrP in snapping fashion perpendicular to the muscle, a “Local twitch response" is often elicited. [10]

A local twitch response is defined as a transient visible or palpable contraction or dimpling of the muscle and skin as the tense muscle fibers (taut band) of the TrP contract when pressure is applied. This response is elected by a sudden change of pressure on the trigger point by needle penetration or by transverse snapping palpation of it across the direction of the taut band of muscle fibers. Thus, a classic TrP is defined as the presence of discrete focal tenderness located in a palpable taut band of skeletal muscle, which produces both referred regional pain (zone of reference) and a local twitch response. TrP help define myofascial pain syndromes. [10, 21, 22]

The cardinal clinical manifestations of MPS include pain in the preauricular region, tenderness over the masticatory muscles with development of TrP opening. [22]

Pain is usually a dull aching pain. It may be localized in the muscles of mastication, the preauricular area and / or the temporomandibular joints or radiating to the angle of the mandible, and temporal region of the neck. It is aggravated by chewing and other jaw functions. It is usually worse in the morning. The term "*Myalgia*" is utilized to describe pain felt in the muscles. It is usually associated with muscle fatigue and tightness. [4]

Myofascial pain syndrome has a multifactorial etiology. The most frequent causes of MPS are the presence of inadequate dentition, unsatisfactory occlusion, oral hyper / para functional habits and / or psychological tension. [3, 23-26]