



IMPROPER MANAGEMENT OF MYOFACIAL PAIN DYSFUNCTION SYNDROM (MPD) IS A GATE FOR TEMPORO-MANDIBULAR JOINT DYSFUNCTION (TMD)

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ABSTRACT

Objective: The masticatory system is the working unit of the body which mainly responsible for speaking, swallowing and chewing. The system is made of T.M.J. Ligaments, teeth and muscles of mastication. The path anatomical constellation of articular and muscular dysfunctions around T.M.J. are termed T.M.J. disorders (TMDs) which associated with local or widespread symptoms including pain and tenderness in and around the masticatory apparatus. The aim of this study was to prove that, the proper management of myofacial pain dysfunction syndrome (MPD) will prevent T.M.J dysfunction.

Patients and Methods: the study included 210 patients with MPD, in 103 patient, MPD was the only symptoms while in 107 patients there were pathological problems in the neighbouring anatomical structures beside MPD symptoms. Avoidance of psychological stress was prescribed for all patients (n=210) beside various treatment modalities.

Results: all patients with MPD and other pathological problems in neighbouring anatomical structures are completely recovered ($p<0.01$), while ten from 103 patients with only MPD symptoms did not recover and T.M.J dysfunction affirmed in them, while the remaining patients in the same group (93 patients) are completely recovered ($P<0.05$).

Conclusion: the proper management of myofacial pain dysfunction syndrome will prevent further T.M.J dysfunction.

KEY WORDS: Myofacial pain dysfunction syndrome, Masticatory system – Temporomandibular joint disorders.

INTRODUCTION

The masticatory system is the working unit of the body which mainly responsible for speaking, swallowing and chewing. It's components also

share in tasting and breathing. The system is made of temporomandibular joint (TMJ), ligaments, teeth and muscles of mastication. All these components are regulated and Coordinated by neurologic controlling system^[1].

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The human TMJ is a Sophisticated, synovial joint with unique kinetic properties, translated into its function in the process of mastication of food. Each joint involves the glenoid fossa above and the mandibular condyle below. The TMJ contains an intra-articular disc that is normally stabilized on the condyle^[2]. The articular disc has a role in reducing friction and dissipation of pressures along the articular surfaces during mandibular movements^[3]. The various movements of the mandibular condyles are achieved by the coordinated actions of the muscles of mastication on both sides.

Four ligaments are related to TMJ., the temporomandibular ligament and three accessory ligaments: the sphenomandibular, the stylomandibular^[1] and malleolar mandibular ligament^[4]. Pinto (1962)^[5] described mandibular malleolar ligament as fibro-elastic tissue connecting the neck and anterior process of the malleus to the medioposterio superior part of the T.M.J capsule, the articular disc and the sphenomandibular ligament. This ligament provides possible explanation for some of ear sensations experienced in biting, chewing or disease of TMJ^[4,5].

The temporalis, the masseter, the medial pterygoid and the lateral pterygoid muscles are the group of muscle of mastication which attached to the mandible. The suprahyoid muscles is the second group of muscles of mastication: suprahyoid m., digastric m. mylohyoid m., geniohyoid m. and stylohyoid m.^[4].

The lateral pterygoid muscle has two heads, the fibers of the upper head insert into the anterior part of the meniscus. It contracts on clenching and in the last part of the closing movements, it is particularly active in incisive movement, notably the biting of finger nail. Accordingly lat. pterygoid m. will be hyperactive when the other closing muscles (temporalis, masseter and medial pterygoid) become hyperactive. It has been showed that patients who suffer the sign and symptoms of T.M.J. dysfunction react to stress by excessive contraction of the masseter muscle (Bruxism).^[4,6,7]

The pathoanatomical constellation of articular and muscular dysfunctions around the TMJ. are termed TMJ. disorders (TMDs): myofascial pain dysfunction syndrome (MPD), internal derangement (TMJ. dysfunction) subluxation and dislocation of TMJ, arthritis, fracture of mandibular condyle, ankylosis^[8]. TMDs are quite common and are associated with jaw pain, mechanical dysfunction, psychological stress, and impairment of the quality of life.^[9,10] MPD can occur in patients with a normal T.M.J, it is caused by tension, fatigue or spasm in the masticatory muscles^[10,11] TMDs are of particular relevance to the external ear canal and middle ear cleft. Various otological symptoms, including otalgia, otic fullness, subjective hearing loss, tinnitus, and vertigo, have been associated with TMDs (Costen's syndrome). James Costen, in a series of articles, attributed this system complex to a misplaced mandibular condyle causing pressure on ear structures^[8,11-13]. The aim of this study was to prove that, the proper management of myofascial pain dysfunction syndrome will prevent T.M.J. dysfunction

PATIENTS AND METHODS

The present study was a prospective clinical study, conducted over period of two years, starting on the first of November 2015. The clinical setting was at the out patients department (Oral and Maxillofacial clinic) of El-Sahel Teaching Hospital Cairo. The inclusion criteria included patients with symptoms of MPD which include pain and tenderness in and around the masticatory apparatus or referred to other locations in the head and neck, and abnormalities of jaw mobility Exclusion criteria included patients presenting with TMJ dysfunction or any other TMJ. Disorders. Specific questioning was probed regarding pain and tenderness in and around the masticatory apparatus, headache, limitation of mandibular movement, presence or absence of any joint noise during mastication, and neck-aches. Also presence or absence of otolaryngeal symptoms (otalgia, otic fullness, tinnitus and vertigo, nasal and paranasal symptoms (obstructive rhinitis, chronic sinusitis).

Examination of TMJ and related muscles and their tendinous insertions was performed next. Which was based on clinical examination^[13]

In addition to history taking and examination of the masticatory system, a full dental examination was done to all patients to exclude any dental source for pain, also full otologic examination for ear, nose and paranasal air sinuses to treat and exclude any otologic or nasal predisposing factors. (otolaryngeal consultation). A full blood count (FBC) is requested for all the patients. The patients were categorized into two groups (I, II). GpI: patients with only MPD symptoms, GPII: patients with both MPD symptoms and pathological problems in neighbouring anatomical structures.

RESULTS

The study included 210 myofacial dysfunction syndrome (MPD) patients in the oral and maxillofacial setting encountered during the study period. The demographic data of MPD patients in both groups are shown in Table 1.

TABLE (1) Demographic data of the two studied groups

	gp (gp I) (n=103)	(gp.II) N=107	p-value
Age (Yrs)			
Min-Max	15-76	14-75	0.019
Mean±SD	45.60±13.3	40.80±15.85	
Gender			
Female	100(97.1%)	79(73.8%)	0.001
Male	3 (2.9%)	28(26.2%)	

Notes: Data are expressed as mean ± SD or number (%).

Yrs = years; min- minimum; max – maximum;

SD = Standard deviation; n= number,

P<0.05 = significant.

GpI: patients with only MPD symptoms, GPII: patients with both MPD symptoms and pathological problems in neighbouring anatomical structures

It should be noted that although females outnumbered males in the groupII, the over whelming majority in the group I was female (P<0.01).

As regard the etiology of MPD group (I), psychological stress was affirmed in 90 patients (87.4%) while bruxism was affirmed in 13 patients (12.6%) (P=0.001).

TABLE (2) Clinical categories of myofacial pain dysfunction syndrome presenting to group (I).

	Number	Percent
Psychological Stress	90	87.4
Bruxism	13	12.6
Total	103	100

Note: Data are expressed as number (%).

As regard etiology of MPD in group (II), Psychological stress was affirmed in all patients (n=107) together with other pathological problems in neighbouring anatomical structures. dental causes (exposed pulp, periodontal disease, wisdom teeth) was affirmed in 64 patients (59.8%), occlusal disharmony (premature contact, malocclusion, cross bite, anterior open bite, class II & class III malocclusion) was affirmed in 9 patients (8.4%), obstructive rhinitis was affirmed in 8 patients (7.5%), paranasal air sinuses pathology (chronic sinusitis, nasal or sinus polyp) was affirmed in 16 patients (15%), otolaryngeal pathology (Fungus in external ear, drum perforation, chronic otitis media) was affirmed in 4 patients (3.7%), bad habits (nail biting, pencil biting) was affirmed in 5 patients (4.7%), advanced bilateral sagittal split osteotomy was affirmed in one patient (0.9%).

TABLE (3) Clinical categories of myofacial pain dysfunction syndrome presenting to group (II).

	Number	Percent
Dental causes	64	59.8
Occlusal disharmony	9	8.4
Obstructive rhinitis	8	7.5
Paranasal sinuses pathology	16	15
Otologic pathology	4	3.7
Bad habits	5	4.7
Others	1	0.9
Total	107	100

Note: Data expressed as number (%)

As regard varieties of treatment modalities in the two groups are presented in table 4 & 5.

TABLE (4) Treatment modalities presenting to group (I).

	Number	Treatment modality	Percent
Stress	90	Avoidance of psychological stress	87.4
Bruxism	13	Night guard	12.6
Total	103		100

Note: Data are expressed as number (%)

TABLE (5) Treatment modalities presenting to group II.

	Number	Treatment modality	Percent
Dental causes	64	Dental treatment including extraction of wisdom teeth	59.8
Occlusal disharmony	9	• Orthodontic treatment. • Oral rehabilitation	8.4
Obstructive Rhinitis	8	Otologic treatment	7.5
Paranasal sinuses pathology	16	Otolaryngology treatment	15
Otologic Pathology	4	Otolaryngeal treatment	3.7
Bad habits	5	Avoidance of bad habits	4.7
Others	1	Occlusal splinting	0.9
Total	107		100

Note: Data are expressed as numbers.

Avoidance of psychological stress was prescribed beside all the treatment modalities.

Success of treatment modalities was affirmed in 93 patients (90.3%) in group I, table 6. While in group II, total success was affirmed in all patients n=107 (100%) (P<0.01) table 6,7.

Ten patients (11.1%) with MPD associated with psychological stress did not recover and T.M.J dysfunction was affirmed in them.

TABLE (6) Success of treatment modalities presenting in group I (n=103).

Treatment modality	Number	Success	Failure
Psychological Stress avoidance	90	80(88.9%)	10(11.1%)
Night guard	13	13(100%)	-
Total	103	93(90.3%)	10(9.75)

Note: Data are expressed as number (%)

TABLE (7) Success of treatment modalities presenting in group II (n=107).

Treatment modality	Number	Success	Failure
Dental treatment	64	64(100%)	-
Orthodontic treatment oral rehabilitation	9	9 (100%)	-
Otolaryngeal treatment	28	28(100%)	-
Avoidance of bad habits	5	5 (100%)	-
Occlusion splinting	1	1 (100%)	-
Total	107	107(100%)	-

Note: Data are expressed as number (%)

DISCUSSION

Myofacial pain dysfunction syndrome (MPD) are frequently associated with psychological stress and abnormal stresses to T.M.J., as in malocclusion of the jaws, or to the masticatory muscles (typically seen in parafunctional habits, such as habitual clenching or grinding of the jaw) the latter causing deleterious secondary effects on the masticatory muscles and T.M.J.^[14-17].

Most MPD patients included in the current study were women of child bearing age ($P = 0.001$). this consistent with findings of previous studies^[18-20] and may be related to hormonal fluctuation^[21].

In the present study tenderness of masticatory muscles was associated with parafunctional habits, such as bruxism, habitual clenching or grinding of the jaw, in 13 patients (12.6%) and they were successfully treated by using night guard splint. This is consistent with finding of previous studies^[14-15]. The present study proved that pain resulting from pathological problems in the neighbouring anatomical structures to masticatory system induced uncomfortable sensation, which in turn exaggerate stress and subsequently exaggerate MPD symptoms, this consistent with finding of previous studies^[11, 18].

The current study showed that avoidance of psychological stress together with using various treatment modalities to treat pathological problems in neighbouring anatomical structures overcame all MPD symptoms (100% success) this consistent with finding of previous studies^[11, 16, 18, 19]. In the current study, MPD associated with psychological stress ($n=90$), 80 patients (88.9%) were successfully treated through avoidance of stress while ten patients (11.1%) did not recover and T.M.J. dysfunction was affirmed, This is consistent with finding of previous studies^[14, 18]. The current study, showed that dental causes as (exposed pulp, periodontal diseases, impacted wisdom & pericoronitis, premature contact) are with MPD symptoms in 64 patients (59.8%). After treating the dental causes together with avoidance of phsycological stress, all symptoms of MPD were terminated. This come in accordance with what was reported by many authers^[24-25].

The present study proved that proper management of occlusal disharmony through oral rehabilitation together with stress avoidance overcame symptoms of MPD. Nine cases were treated by that treatment modality and they subsequently

recovered from MPD. This is in accordance with many authers who recommended oral rehabilitation to treat MPD^[26-27].

The present study proved that otolargngeal treatment of pathological problems in ear, nose paranasal sinuses, together with psychological stress avoidance, overcame MPD symptoms in 29 patients this is in accordance with previous studies^[28-30].

CONCLUSION

After the end of this study the following can be concluded:

- 1) The proper management of MPD will prevent further T.M.J. dysfunction.
- 2) The success of treatment of MPD depends on the cooperation between the surgeon and the patients.
- 3) In patients with MPD and pathological problems in the neighbouring anatomical structures treatment of these problems will help in controlling symptoms of MPD.

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