Case Report

Treatment of Myofascial Pain Dysfunction Syndrome in an Edentulous Patient – A Case Report

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Abstract:

Pain is a complex phenomenon, causing discomfort, suffering and psychosocial morbidity. Myofascial Pain Dysfunction Syndrome (MPDS) is attributed to pain & inflammation of the muscles, with no definitive pathogenesis causing this syndrome. The purpose of this paper is to describe the multidisciplinary approach for the treatment of a 70 year old female patient who suffered from myofacial pain syndrome for the last 10 years. Combined with Trans-cutaneous electrical nerve stimulation (TENS), the construction of a complete denture in order to re-establish the proper vertical dimension leading to decrease in muscular activity thereby eliminating the underlying cause of disease and providing a definitive treatment for the patient with MPDS.

Key Words: Myofascial pain syndrome, Temporomandibular Joint, Trans – cutaneous electric nerve stimulation.

Introduction:

Pain in facial region originating from both temporomandibular joint and jaw muscles is a common clinical problem. There are many synonyms for this condition including Myofascial Pain Dysfunction Syndrome (MPDS), Mandibular Dys-function Syndrome and the Temporomandibular Joint Dysfunction Syndrome (Edmiston & Larsen, 1978). Signs and symptoms of MPDS vary, but generally, the patient complains of one or more of the following: - Pain in the region of the temporomandibular joints (TMJ), tenderness in the region of one or both joints, temporo-mandibular joint sounds like clicking or crepitation, restricted jaw opening, disturbed chewing pattern and locking of jaw (Blasberg & Greenburg, 2003).Muscle pain is one of the commonest chief complaints of the patient and while it primarily involves jaw muscles, some times cervical muscles are affected as well. Headache caused by the muscular tension of the jaw muscles is another presenting feature (Lous, 1976).The precise cause of MPDS is not fully understood. Postural, emotional and behavioral factors may contribute to it (Gerwin, 2004). Consequently, many different therapies including conservative, have been advocated for patients with myofascial pain. A number of successful treatment outcomes have been reported, including occlusal splints, physiotherapy, muscle-relaxing appliances, and pharmacological interventions (Al Ani et al, 2005). Inspite of its diverse etiology, occlusal instability has been long considered an important aetiological factor. In complete denture wearers with mandibular dysfunction, symptoms often disappear after improvement of the occlusion (Carlsson, 1976).

Trans-cutaneous electrical nerve stimulation has proven to be useful in many painful syndromes. Based on Wall & Melzack's Gate Control Theory and later improved as trans-cutaneous electrical stimulator, TENS has been used very commonly for pain relief in the last 30 years (Tarhan et al, 1999). It works by decreasing pain perception and it may be used to control acute and chronic pain.

Case report:

A 70-year-old female patient was referred by her general dental practitioner to the Department of Prosthodontics, People's College of Dental Sciences for treatment of pain & prosthodontic rehabilitation. The patient complained of pain on the right side of face, difficulty in eating and opening the mouth for the last 10 years. The disease was particularly severe for last 2 months. She also reported pain while talking or moving her jaw, intense unbearable pain was perceived anterior to the right ear and radiating to the temple region. She gave a history of being edentulous for last 3 years and was a non denture wearer. Pain was described as being to the score of nine out of ten on the Visual Analogue Scale (VAS).

Pain could be elicited in right joint area during opening and closing the mouth. Using the flat palpation

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technique, tenderness was recorded over massetric muscle which could possibly be termed a myofascial trigger point (Dommerholt, 1995). Based on symptoms and clinical examination the patient was diagnosed to have Myofascial Pain Dysfunction Syndrome. In consultation with an oral physician,a treatment plan was formulated. Patient was put on pharmacotherapy which included Chlorzoxazone 500 mg, Paracetamol 500mg and Diclofenac potassium 50 mg twice daily. Warm fomentation was recommended twice daily for 5-10 minutes and physiotherapy in the form of jaw exercises. Trans-cutaneous electrical nerve stimulation therapy was given by placing skin electrodes in the right pre auricular and massetric muscle region. The pulse width taken was 60 micro-second. At the pulse rate of 80 impulses/ sec. it was given for 15 min. on alternate days for 1 month (Fig. I). Prosthetic rehabilitation was done, paying attention to the impression technique and appropriate designing of the occlusal scheme.

Fig. I Showing placement of skin electrode: right pre-auricular and massetric muscle.

A primary impression of the maxillary denture bearing area was made with a low viscosity irreversible hydrocolloid material (Alginate; DENTSPLY Ltd, UK), to ensure minimal distortion of the displaceable tissues. The final impression was then made using Heavy bodied addition-curing polyvinylsiloxane (Zhermack® clinical polyvinylsilo-xane impression material; Badia Polesine, Italy) impression material which was loaded on the custom tray and seated in the patient's mouth. Subsequently, the material was used for border moulding. The area of the custom tray was then filled with light bodied polyvinylsiloxane impression material.A wash of light-bodied polyvinylsiloxane impression material was also placed over the heavy bodied material that had compressed the 'normal' tissues. This tray was placed in the mouth and allowed to set. Excess material was removed after the material set. The impression was re-inserted to ensure that it was retentive and did not rock when pressure was applied over the displaceable areas. Proper manipulation ensured so that no overextension occurred. The impression was cast in dental stone, paying careful attention to preserving the bordered moulded sulcus area. A heat-cured acrylic transparent base plate was fabricated to assess the accuracy of fit of denture base. Denture fabrication was then continued in the usual manner: Face-bow transfer, re-establishing vertical dimension and arrangement of teeth was done on a

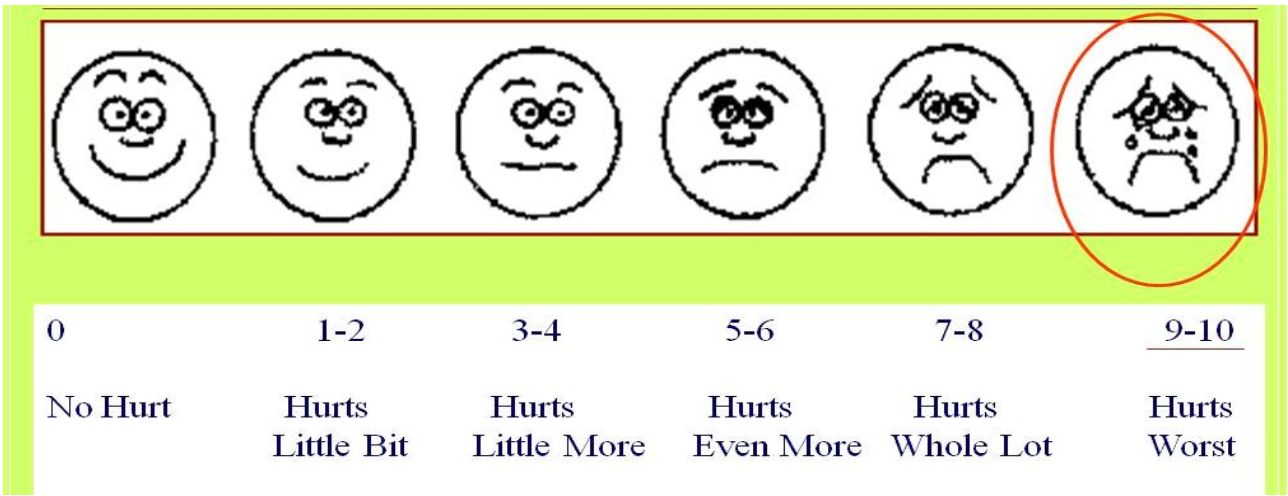

Figure II : Showing how facial expression of patient changes with gradual increase of pain and scores given accordingly: No pain 0; pain can be ignored 1-2; pain interfering with task 3-4; pain interfering with concentration 5-6; interferes with basic needs 7-8 and pain which require bed rest 9-10 .This pain assessment tool is intended to help patient care providers to assess pain according to individual patient

semi-adjustable articulator (Hanau H-2 series@; Water Pik) in order to achieve balanced articulation. Attention was given for even tooth contact in excursive movements of the mandible. The dentures were delivered (Fig. III).

In subsequent review appointments, the patient reported satisfaction with relief in pain as well asstability, aesthetics and function of denture (Fig. IV).

Fig. III: Photograph showing dentures fabricated for patient.

Fig. IV: Photograph showing patient with denture and the adequate muscle support is provided.

Discussion:

Muscular pain or tenderness in and around the joint area, excessive posturing of the mandible and occlusal disharmonies, use of the jaws as a method of releasing emotional tension are some of the supposed causes of MPDS. Myofascial pain syndrome is the most common cause of musculo-skeletal pain in medical practice and should be suspected in all chronic pain patients (Dunteman & Swarm, 1995).

A diagnosis of myofascial pain should be suspected, if the patient exhibits more than one or more of the following signs and/or symptoms:

- Pain on palpation of the temporomandibular joint.
- Pain on palpation of associated mandibular muscles.
- Limitation and/or deviation of mandibular movement. This is assessed by measuring the range of jaw movement, which is the only measurable parameter that can be objectively recorded in relation to temporomandibular disorder.
- Joint sounds and headache. Headache alone or joint sounds alone are not diagnostic of myofascial pain. Joint sounds can be intermittent.

In the present report, using these criteria, the patient was diagnosed as having MPDS.

With the advances in dental techniques and dental treatment philosophies, more patients retain some, or all, of their natural teeth until later in life. Sometimes, unusual arrangements of remaining natural teeth can lead to unfavourable distribution of occlusal forces on the residual alveolar ridges, resulting in bone resorption and loss of vertical dimension muscle fatigue. As a result of accompanying medical conditions or medical treatments, such elderly patients may be unsuited for surgical procedures or intervention. The management of poor denture-bearing areas can be accomplished on the basic principles of complete denture construction without recourse to surgically invasive procedures.

Although the myofascial pain dysfunction syndrome has a multiple aetiology, faulty vertical dimension is a frequent cause of muscular pain among wearers of full dentures. It is well known that bite force and EMG activity are considerably reduced in edentulous patients, more so in edentulous MPDS subjects; endurance time is reduced in such subjects and so is fatigue resistance of the masseter muscles (Tortopidis et al 1999). Monteith (1984) have presented an hypothesis that the amount of free-way space present in an individual is an expression of the contractile power of the masseter and medial pterygoid muscles. They have stated that their method has proved particularly effective in the treatment of denture-wearers presenting with symptoms of the myofascial pain dysfunction syndrome. Based on these assumptions, the establishment of proper vertical dimension was given due importance while constructing dentures in the current case.

Transcutaneous electrical stimulator sends a painless electrical current to specific nerves. The mild electrical current generates heat to relieve stiffness, improve mobility and relieve pain. The treatment is also believed to stimulate the body's production of endorphins or natural pain killers. The duration of pulses

and frequencies can be revised and it is possible to stimulate different types of fibers by chosen stimulation types. It is possible to stimulate selectively Aα, β, and γ carrying touch and position sensation and it is possible to block pain in medulla spinalis level, or to stimulate Aδ and C fibers carrying pain and it blocks the pain in upper levels (Tarhan et al, 1999). In this case TENS proved to be appropriate choice of management.

Optimal function of the postural and facial expression muscles requires a correct support from the natural teeth and the ridge areas or from the adequate designed prostheses. Good muscular control and co-ordination are essential for effective use of complete denture (Jacob et al, 2004). In balanced occlusion, there is equilibrium on both sides of the denture .The denture base is more stable during various functional movements which will be less likely to abuse the foundation tissue which in turn reduces the bone resorption. This reduces the load transmitted to temporomandibular joints and masticatory apparatus. Balanced Occlusion is required for smooth uninterrupted tooth contact in the dynamics of daily mandibular movements (Mohl & Drinnan, 2000) and was one of the objectives in the presented case.

Conclusion:

It is essential that the correct diagnosis be made before treating a case of MPDS. Merely treating the patient symptomatically does not provide long term results, at the same time injecting trigger points and tender spots and hoping for the best does not provide satisfactory results. The patient should be counseled and trained well with jaw exercises as well as acceptance of the denture. The proper treatment of Myofascial Pain Syndrome may be one of the most rewarding if handled correctly.

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