Evaluation and Management of Occlusal Disturbances among Temporomandibular Disorders Patients: A Report of Two Cases

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The occlusal interference is considered as contributing factor in temporomandibular disorders. It has a strong association with occlusal interferences causing occlusal disturbances leading to orthopedic instability of temporomandibular joint. Digital evaluation should be made to eliminate the premature contacts of the teeth and to establish the harmonious, functional occlusion. T-scan is a grid-based sensor technology and occlusal system that allows an easier and more accurate way to measure occlusal timing and the force. These two case reports explains the steps involved in the correction of chronic myofacial pain dysfunction and premature occlusion of teeth with balancing side interferences, which are highly destructive for joint and teeth structure due to the amount and direction of force generated in temporomandibular patients.

Keywords: Functional occlusion, Myofacial pain, Temporomandibular disorders

INTRODUCTION

Large sections of people across the world suffer from temporomandibular disorders (TMD). TMD are characterized by the group of disorders like pain and clicking in the temporomandibular joint (TMJ) associated with pain in muscles of mastication and limited mouth opening. Teeth are important to human beings not only for esthetic purposes but also required for functional and psychological well-being of a person. TMD being multifactorial disorder having strong positive association with occlusal interferences causing occlusal disturbances leading to orthopedic instability of TMJ and hyperactivity of the muscles of mastication causing TMD. T-scan III is used to record the teeth contacts in three dimensions as patient bite down and slide the teeth to the side or front. The data are reviewed looking at each contact in every 0.01 s of the 3-10 s recording. TEK-scan III provides information on occlusal pattern, including the quantification of force and sequence of contact. This paper completely focuses on digital evaluation of occlusal instability among TMD and also facilitates to arrive at diagnosis and treatment for patients suffering from signs and symptoms of TMD.

CASE REPORT

Case Report 1

A 31 years old patient visited our Oral Medicine and Radiology Department with a complaint of pain and clicking sound in right TMJ region present from past 1 year. On eliciting past dental history, underwent extraction of lower right back tooth 3 years back. Clinical examination revealed tenderness on the right side of the masseter muscle and temporalis on palpation. Visual analog scale (VAS) pain score of 8 was recorded; mouth opening was in normal range. The click sound was observed in the right side of the TMJ. An orthopantomogram (OPG) was advised, showed no pathology related to TMJ. Based on clinical examination and OPG, diagnosis of myofacial pain on the right side of masseter and temporalis muscle was given. The patient was subjected to digital occlusal evaluation using T-scan III.

Digital evaluation revealed force of distribution, with right force distribution being 42% and left force of distribution being 52%, and premature contact was seen in 26, 12 the occlusal correction (selective grinding) was performed in relation to 26, 12 and after selective grinding the force was 49.6% on right side and 50.4% on left side. Patient was given post treatment instructions, to be on the soft diet for 1 week, to support the jaw while yawning and eating food...
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and not to open mouth too wide. The patient was recalled after 5 days, 1 month and 3 months patient showed 90% of recovery from TMJ pain with VAS score of 1.

Case Report 2
A 29-year-old male patient visited our Oral Medicine and Radiology Department with a complaint of pain and clicking sound in left TMJ region present from past 6 months. Personal history revealed clenching of teeth during tension and stress. TMJ examination revealed pain and opening click in left TMJ with difficulty in closing mouth with VAS score of 8. Based on the clinical examination and OPG report, diagnosis of anterior disc displacement without reduction was given. The patient was subjected to digital occlusal evaluation using T-scan III.

Digital evaluation revealed the force of distribution, with left force distribution being 58% and right force of distribution being 32% and premature contact was seen in 16, 17, 26. The occlusal correction (selective grinding) was done in relation to 16, 17, 26. After selective grinding, the force was 48.2% on the right side and 51.8% on the left side. Patient was given post treatment instructions to be on the soft diet for 1 week, to support the jaw while yawning and eating food and not to open mouth too wide. The patient was recalled after 5 days and 1 month, and 3 months for follow-up and patient showed 75% of recovery from TMJ pain with VAS score of 2 [Figures 1-3].

DISCUSSION

The general dentistry practices in treating TMD are by self-care, guiding the patient to eliminate oral habits such as teeth clenching, chewing gum and provide information on jaw care associated with daily activities.4

The physical therapy using passive modalities such as heat and cold therapy, laser therapy, and transcutaneous electrical nerve stimulation. Range of motion exercise and posture therapy along with passive stretching and general exercise were advised. As there is no choice and timing of this treatment for individual considerations and does not provide specific guidelines, it is difficult to follow the procedure.5

Intra-oral appliance therapy by splints can be used but long-term wearing of splint is a risk for a permanent change in the occlusion.6 and also the appliance needs periodically reexamined and should be readjusted to accommodate changes in mandibular posture or muscle function. This approach was associated with great technical difficulties.

The treatment using pharmacotherapy includes mild analgesics, non-steroid anti-inflammatory analgesics, antianxiety agents, tricyclic antidepressants, and muscle relaxants are medications used in the treatment, to decrease and control the pain. Because of the adverse effect of all these drugs short-term or intermittent use is preferred. The COX-2 inhibitors like rofecoxib were used as an alternative to non-steroidal anti-inflammatory drugs but proven unfulfilled due to the association of cardiovascular incidents. The long-acting benzodiazepine, amitriptyline, clonazepam and tricyclic antidepressants, is used in managing chronic orofacial pain. Both the drugs have side effects of dry mouth, sedation, and dysphoria.6
Hence, there is a critical need for dentists to help patients evaluate the treatment and products that are promoted for TMD therapy.

There is a strong correlation between occlusal interferences and TMD, so the clinician’s task is detecting the type of occlusal parameter strongly correlated with TMD. Conventional methods of occlusal evaluation include articulating paper and the impression wax. The main disadvantage of traditional methods are, they are two-dimensional in nature and do not quantify the occlusal force. Hence, digital analysis provides additional information on occlusal pattern, including the quantification of force, sequence of contact, and occlusal - disocclusal timing.

The occlusion is considered to play an important role in TMD. Excessive load on the masticatory system due to occlusal instability eventually gives rise to the temporomandibular damage. Correct understanding of dynamic occlusion is very important to differentiate normal and pathological occlusal parameters. Digital occlusion by T-scan provides the information to evaluate force of occlusion and the occlusal contacts quantitatively. Among the occlusal interferences evaluated, the balancing side interferences were significant with TMD. Balancing side interference is highly destructive for joint and dental structure due to the amount of force and direction of force generated.

Clinicians should preferably focus on identifying and correcting the deleterious functional and parafunctional forces. The occlusal components which are associated with TMD should carefully evaluate and corrected so that it helps in the prevention, diagnosis and treatment of TMD.

In a patient with anterior disc displacement without reduction had higher incidence of premature contact that resulted in condyle displacement, which caused friction and intra-articular pressure on TMJ resulting in alteration of the structure of TMJ. Therefore, more attention should be shown toward detecting and correcting situations where damage is being caused to components of the masticatory system by excessive functional or parafunctional forces. Balancing interferences with precluding teeth have a strong association with TMD.

The protocol of management of TMD patients in our department

**CONCLUSION**

The subject of TMJ pain and dysfunction is complex. Signs and symptoms may be specific or non-specific. Myogenic causes coexist along with the articular disorders in TMD patients. Dynamic occlusion evaluation by T-scan showed that the occlusion time and dis occlusion time in TMD patients are prolonged compared to normal TMJ. Digital method is more precise as compared to

**Figure 3: Mechanism of muscular hypercontraction**
conventional methods for evaluation of occlusion. Hence, it is recommended to all general dentists and oral physicians to advise T-scan, followed by pharmacotherapy and occlusal splints. Continued and scheduled follow-up of the patient is required in TMD patient to monitor and introduce the required correction in the later period.

REFERENCES