REVIEW ARTICLE

Role of Occlusion in Temporomandibular disorders; a literature review

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Abstract :Temporomandibular disorder (TMD) is the main cause of pain of non-dental origin in the oro-facial region. Aetiology is multi factorial. Occlusion is cited as the major etiological factor causing Temporomandibular joint pain. TMD is frequently found in children and adolescents, and show increased prevalence in subjects between 15 and 45 years.

Aesthetic awareness, the development of new aesthetic orthodontic techniques and the possibility of improving prosthetic rehabilitation has increased the number of adults seeking orthodontic treatment. The interest in the relationship between occlusal factors, orthodontic treatment and TMD has grown and many studies have been conducted. Indeed, claims that orthodontic treatment may cause or cure TMD should be supported by good evidence. Hence, the aim of this article is to critically review evidence for a possible association between malocclusion, orthodontic treatment and TMD.

Key words:-Temporomandibular joint, Temporomandibular disorders, Acupuncture, Splint therapy

INTRODUCTION

Temporomandibular disorder (TMD) is the main cause of pain of non-dental origin in the oro-facial region[1]. Aetiology is multi factorial. At present, the role of occlusion in relation to the aetiologyof TMD is widely considered as contributory by initiating, perpetuating or predisposing to the disorders. It is estimated that occlusal factors contribute about 10 to 20 percent to the total spectrum of multifactorial factors, which differentiates between healthy individuals and patients with TMDs.[2-3]

Signs of dysfunction may be the result of how the individual uses the occlusion and not a result of its structural features. Thus the term nonphysiologicocclusion does not imply a cause and effect relationship[4].

DISCUSSION

The temporomandibular joint (TMJ) is the joint between the lower jaw and the base of the skull. TMJ disorders (TMD) refer to a group of disorders with symptoms that include pain, clicking in the jaw joint and/or problems with chewing or opening the jaw. This condition can be known by a variety of conditions including craniomandibular disorders (CMD) and is a frequent cause of facial pain problems.[5-6]

A positive relationship between occlusal factors and TMD has been suggested[7].Prevalence studies have reported approximately 75% of the population having at least one sign of joint dysfunction (abnormal jaw movement, joint noises, tenderness on palpation, etc) and

approximately 33% having at least one symptom (facial pain, joint pain, etc).[8-9] It is a significant finding that in all studies except one[10], females are affected more than males. The common signs and symptoms of TMD include pain, joint sounds (clicking, grating), and limited or asymmetrical jaw movement.

Treatment options for TMD include reassurance (patient education, self care and behaviour therapy), physiotherapy (such as ultrasound, acupuncture, short wave diathermy laser, heat exercises, and biofeedback), splint therapy, drug therapy, occlusaladjustment, surgical intervention and combined treatment.

Acupuncture has been a particular treatment modality favoured by List[11]. Furthermore, some authors actually debate the need for treatment: LeResche[12] suggested only 10% of the population aged over 18 are likely to have symptoms that require treatment while others McNeill[13] and Okeson[14]estimated that 3.6% to 7% of the population are actually needing treatment.

There is a significant degree of controversy regarding the relationship of TMD and orthodontic treatment[15,16]. The use of orthodontic appliances to correct the alignment and vertical relationships of teeth has small yet significant risks: an increase in plaque build up, leading to an increase in oral and dental disease, and a reduction of bone support to the teeth and possible root resorption[17].

The working hypothesis appears to be that if the teeth bite incorrectly in the form of a malocclusion, this can then apply a restriction to the function of the TMJ or worse still, predispose it to future pathological deterioration. By correcting the alignment and arrangement of the teeth the TMJ will remodel to the overriding new functional needs thus treating any disease processes/malfunction of joint integrity and allowing normal function to continue unabated for the life of the patient.[18]

In an epidemiological study, a low incidence of certain variables of malocclusion was found (unilateral open bite, negative overjet and unilateral cross-bite in men, and edge-to-edge bite in women) with signs or symptoms of TMD[19].By including static and dynamic factors of occlusion, a significant correlation with TMD incidence was statistically determined but with a low correlation coefficient[20].

Anterior open bite,overjetof 6 mm or more,unilateral cross-bite and difference between centricrelation and maximal intercuspation amounting tomore than 2 mm with more than six posterior teeth to be replaced can be considered increased risk factors for TMD[21]. Conversely, Rammelsberg[22] claimed that high abrasion and insufficient restorative procedureon posterior teeth are risk factors causing occlusalinstability.

In a population of children, Pereira et al.[23] did not find any correlation between malocclusion and TMD but they identified bruxism and posterior cross bite as risk factors for TMD. Tecco et al.[24] and Tecco and Festa[25] found a correlation between TMD with painful symptoms in children (5-15 years of age) and unilateral cross bite, but not with TMJ sounds. Badelet al.[26]

found a significantly higher prevalence of hyperbalance and interference contacts in asymptomatic patients compared to TMD patients.

Le Bell et al.[27] found that artificial interferences did not stimulate development of dysfunctional symptoms in healthy subjects, instead they adapted successfully to them.

CONCLUSION

Taking into account the great number of static and dynamic occlusal variables, it is difficult to comprehend the overall correlation with the development of TMDs due to the often non-standardized studies based on occlusal analysis.Occlusion ensures orthopedic stability of TMJ, whereas occlusalstability is ensured by mutually antagonistic contacts in the position of maximal intercuspation. When the relationship between the two factors is compromised, it could lead to an overload of articular structures and consequently pose a risk of TMD developmentevidence. Hence, the aim of this article is to critically review evidence for a possible association between malocclusion, orthodontic treatment and TMD.

Key words:-Temporomandibular joint, Temporomandibular disorders, Acupuncture, Splint therapy

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