



ADVICE SHEET

TEMPOROMANDIBULAR DISORDERS (TMDs) AND THE ORTHODONTIC PATIENT

This advice sheet gives advice for orthodontists who have patients with Temporomandibular disorders (TMD).

Introduction

The importance of occlusion in the aetiology of TMD (Temporomandibular Disorders) and hence the role of the orthodontist in the management of these disorders has caused controversy for a number of decades. This is possibly due to some studies finding weak correlations between some types of malocclusion and TMD.

- It is generally accepted that TMD is not just one condition but rather several which encompasses a variety of signs and symptoms. Many other terms have been employed including: temporomandibular pain dysfunction syndrome (TMPDS), masticatory myalgia and craniomandibular dysfunction. Recent research shows that factors such as depressive illness, sleep disturbances and stress are amongst the major aetiological factors in TMD, rather than occlusal factors. Genetic factors may also predispose to causing some TMDs.
- Evidence is being established to indicate that not only can TMJ pain be influenced by hormone level changes but there may also be sex differences in hormone receptor levels in the TMJ discs. Furthermore, genetic variation in human stress response and resiliency is now also being found.
- TMD is common and can be found in individuals from all over the world. Prevalence varies between studies from 7 to 84% with an age range from 3 to 74 years. It is generally accepted that TMD is more

common in females than males and tends to start in teens, increasing in prevalence with age. It is, therefore, not surprising that we occasionally see patients with TMD as the demographics match those of our orthodontic patients.

Assessment of TMD

It is good practice to routinely undertake a TM joint assessment as part of the patient's orthodontic assessment. Any pre-existing TMD signs or symptoms should be clearly recorded in the notes. For example: pain on palpation of temporomandibular joints, pain on palpation of associated muscles, limitation or deviation of mandibular movement and joint sounds. In addition, when OPG radiographs have been taken for assessment of the dentition, the condyles should also be assessed for signs of pathology including flattening or asymmetry.

- However, even if the patient has no signs or symptoms of TMD, this fact should still be recorded.
- It is important to inform the patient if they have TMD signs and/or symptoms before orthodontic treatment commences so that the patient does not think they have occurred as a result of orthodontic treatment. It is also helpful to explain that orthodontic treatment is not being undertaken to cure their TMD. Even if a patient has not indicated that they expect improvement of their TMD, they may nevertheless expect this from what they have been informed previously

Advice to patients with TMD prior to treatment

- Orthodontists can offer simple conservative advice to patients who are planning to undergo orthodontic treatment.
- For those with clicking or locking it is often beneficial to give a brief explanation about the disc and how it does not always move in harmony with the condyle.
- Patients can be reassured that their symptoms are not necessarily progressive and will often resolve spontaneously.
- An explanation of the relationship with stress (e.g. can get worse around exam time) is also useful.
- Advice on some practical measures can include:
 - Resting the joint - e.g. avoiding over opening during wide yawning etc.
 - (Soft diet – some patients find certain food will trigger symptoms)
 - Analgesics – e.g. non steroidal anti-inflammatory drugs (if not otherwise contra-indicated)
 - (Application of heat - e.g. a heat pack can be used to relax muscles.
- If conservative measures are ineffective, then the orthodontist can consider referral to a clinician with an interest in TMD, although the availability of such help varies from area to area. Recent evidence has highlighted cognitive behavioural therapy (CBT) may be effective in the treatment of TMD and this could be accessed via a referral to the patient's General Medical Practitioner.
- It is good practice to delay the start of appliance treatment until acute symptoms have settled.
- Interestingly, some patients report relief from symptoms during treatment.

Management of TMD during orthodontic treatment

- If a patient develops TMD during treatment, management is in the same conservative manner as described above.

Should we treat to a functional occlusion to avoid future TMD?

It has been suggested by some orthodontists that achieving certain occlusal goals will protect against future TMD.

These goals can include:

- a) A mutually-protected occlusion i.e. canine guidance/group function and anterior guidance.
- b) Avoidance of non-working side interferences

If it is straightforward and reasonable to achieve these occlusal goals, then there is no obvious reason not to encourage this. However, there is lack of consensus as to what precise occlusal scheme constitutes a “functional occlusion” and it is not clear that such an occlusion would, in any case, be stable or increase stability.

- In addition, it may not be achievable in all cases.
- It is sensible to diagnose and correct any significant displacements (as this may mask the true nature of a malocclusion, e.g. a large overjet).
- There is no conclusive evidence to show that occlusal factors (such as occlusal interferences) cause TMD or that prolonging treatment to eliminate small (<2mm) displacements will prevent future TMD.

Does orthodontic treatment cure or prevent future TMD?

- Current evidence does not support the use of orthodontic treatment as a way of treating or preventing future TMD.
- Some studies have found a weak correlation between some malocclusions and TMD. However, the correlations are universally weak and it must be remembered that a correlation does not indicate a “cause and effect” relationship.

Does orthodontic treatment cause TMD?

- Current evidence suggests that orthodontic treatment does not cause TMD.

Bruxism

- More recent evidence suggests that night-time bruxism is part of a heightened sleep arousal response i.e. it may actually be a form of parasomnia.
- Night-time bruxism, at least, may have little to do with occlusal interferences.

Consent

- When commencing orthodontic treatment, patients need to be advised correctly. Their TMD condition, if present at the start of treatment, may worsen, get better or stay the same.
- TMD does not prevent delivery of orthodontic care

References & Further Reading

Diatchenko L et al., (2005)

Genetic basis for individual variations in pain perception and the development of a chronic pain condition.

Human Molecular Genetics; 14: 135–143.

Gray RJM, Davies SJ and Quayle AA (2002).

A Clinical Guide to Temporomandibular Disorders. The Clinical Guide Series. BDJ Books
ISBN 0904588440

Kato T, Thie N M R, Montplaisir J Y, Lavigne G J. (2001)

Bruxism and orofacial movements during sleep. Dental Clinics of North America; 45: 657-684.

Luther F. (2007)

TMD and occlusion Part I: Damned if we do? Occlusion: the interface of Dentistry and Orthodontics.
British Dental Journal; 202: E2

Luther F. (2007)

TMD and occlusion Part II: Damned if we don't? Functional occlusal problems: TMD epidemiology in a wider context.
British Dental Journal; 202: E3
(Erratum: British Dental Journal (202) No. 8 Apr 28, 2007 pages 474-475)

Luther F, Layton S, McDonald F. (2010)

Orthodontics for treating temporomandibular joint (TMJ) disorders.
Cochrane Database of Systematic Reviews 2010, Issue 7. Art. No.:
CD006541. DOI: 10.1002/14651858.
CD006541.pub2.

Penlington C, Bowes C, Taylor G, Otemade AA, Waterhouse P, Durham J, Ohrbach R. (2022)

Psychological therapies for temporomandibular disorders (TMDs). Cochrane Database of Systematic Reviews 2022, Issue 8. Art. No.:
CD013515. DOI:
10.1002/14651858.CD013515.pub2.

Stohler C S, Zarb G A. (1999)

On the management of temporomandibular disorders: a plea for a low-tech, high prudence therapeutic approach. Journal of Orofacial Pain; 13: 255-261.

Updated and reviewed by the Clinical Governance Directorate of the British Orthodontic Society 2023. Recommendations may change in the light of new evidence.

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