# Adults seeking orthodontic treatment: expectations, periodontal and TMD issues

L. Christensen<sup>\*1</sup> and F. Luther<sup>2</sup>

## IN BRIEF

- Highlights that treatment planning for adult orthodontic cases is often more complex than for adolescent patients.
- Suggests that patients should be assessed for TMDs pre-treatment.
- Points out that TMDs may get worse, better or stay the same, regardless of braces treatment.
- Highlights that periodontal screening of potential orthodontic patients is necessary before considering treatment.

The growth in adult orthodontics presents new challenges to both the general dental practitioner and the orthodontist. Although many of the main objectives of orthodontic treatment are similar for adults, young adults and children, adult patients frequently bring significant challenges in several areas not often seen in the younger patient group. In areas such as planning realistic treatment outcomes, it is paramount that the patient's expectations are identified, respected and managed where appropriate. The adult patient's dental health often dictates deviation from the ideal treatment plan and periodontal problems are a common example. Based on current evidence, this paper presents an overview of some of the difficulties in the management of these issues, as well as highlighting developments with regard to pain conditions and their relevance to orthodontic treatment and its effects on temporomandibular joint disorders (TMD) management.

## IMPORTANT DEVELOPMENTS IN ADULT ORTHODONTICS

The number of adults seeking orthodontic treatment appears to be on the increase. From a UK questionnaire-based study the estimated annual adult case starts per GDC listed Specialist in Orthodontics were 20.9 within the NHS and 28.2 treated privately.<sup>1</sup> Extrapolating from this study the number of adults treated by GDC registered specialists should be approximately 51,000 adults. In the UK, there is to our knowledge no clear evidence that the trend is upward as this is the only study so far. Anecdotal evidence, however, would suggest that the number of adult new patients seeking advice and treatment is on the increase. Cedro et al.1 found that 72.5% of the cases underwent orthodontic treatment only and 22.8% had a multi-disciplinary aspect with restorative/orthodontics accounting for the vast majority of these cases.

The practice surveys reported in the *Journal of Clinical Orthodontics* have shown a gradual increase in the number of adults starting orthodontic treatment in the United States.<sup>2</sup> From 1981 to 2013 the number of

<sup>1</sup>Specialist in Orthodontics, 69–71 Banbury Road, Oxford, OX2 6PE; <sup>2</sup>Consultant and Honorary Senior Clinical Lecturer in Orthodontics, Charles Clifford Dental Hospital (Sheffield Teaching Hospitals NHS Foundation Trust), 76 Wellesley Road, Sheffield, S10 2SZ \*Correspondence to: Dr Lars Christensen Email: Ichristensenortho@gmail.com

Refereed Paper Accepted 24 October 2014 DOI: 10.1038/sj.bdj.2015.46 ©British Dental Journal 2015; 218: 111-117 adult case starts among the orthodontists surveyed grew from 15.4% to 23%. Perhaps even more interesting is that the number of orthodontists offering adult orthodontics grew from 51% to 98.6%. A survey of the membership of the American Association of Orthodontists showed that the number of adult patients grew 14% in the period from 2010-2012.<sup>3</sup>

A study undertaken at the Eastman Dental Institute<sup>4</sup> found the reasons for seeking treatment to be multifactorial (Fig. 1).

However, it is not just the number of adults seeking treatment which is important. Many referrals for adult orthodontics require an interdisciplinary approach because of the accumulating complexities the ageing dentition present. The burden and responsibility of record taking, sharing communication and discussion of options before finalising the treatment plan and consent process is increasing. More and more patients are also seeking treatment without referral. This can lead to additional issues such as continuation of general dental maintenance, periodontal control, post-orthodontic restorative treatment and long-term management of retention measures.

Examination and discussion of treatment with adult patients often leads to a considerably more complex assessment compared with the adolescent patient population.

Although adult and adolescent orthodontics are comparable in many aspects, there are several areas that complicate the treatment of adult patients:



Fig. 1 Reasons for adults seeking orthodontic treatment according to Cedro et al., 2010<sup>1</sup>

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- Adult orthodontic patients frequently have different expectations to children/ young adults
- The expectation of more discreet orthodontic appliances
- Frequently more restored teeth or indeed missing teeth
- Tooth wear
- Periodontal problems
  - Attachment lossRecession
- Absence of growth
- Higher prevalence of TMD
- Aesthetic demands
- Retention protocols.

We will not analyse the full list but have chosen to discuss three of these areas:

- Adult orthodontic patient expectations
- Periodontal considerations before, during and after orthodontic treatment
- Relevance and management of TMDs to orthodontics in the light of new developments.

# ADULT ORTHODONTIC PATIENT EXPECTATIONS

Delivering care that meets the patient's expectation is the ultimate goal for all practitioners. It is often difficult to fully assess and discuss realistic goals at an initial consultation before all the relevant records and the subsequent findings are gathered. Ali et al. in 2013<sup>5</sup> described the information gathering process and the necessary (and time consuming) meetings to discuss treatment options, risks and benefits before an ultimate decision on starting treatment. In cases requiring, for example, restorative and periodontal input, obtaining full and detailed information for treatment planning, including alternatives and long term maintenance required, is often very demanding on the patient and clinician's time. It is relatively rare that teams meet with the patient to discuss the treatment options and therefore the result is often a long paper trail where the patient frequently loses confidence and 'opts out'.

# ADULT EXPECTATIONS: SOME KEYS TO SUCCESS

Newton and Cunningham<sup>6</sup> elegantly stated: 'The patient's expectations of treatment are a key determinant of satisfaction with treatment'. It is therefore vital that sufficient time is spent outlining and documenting the patient's concerns and expectations.

The most common motivating factor is 'straight teeth' or 'improved smile aesthetics'. There are likely to be some differences in the motivating factors between referred patients and self-referred patients and possibly also between patients referred for NHS and private orthodontic care. An objective such as 'straight teeth' should be investigated further as in many situations this is what the patient feels they have to say to get the practitioner to 'agree to treat'. When questioned further there are frequently other external and internal motivating factors including peer pressure and influence by media.

## ADULT EXPECTATIONS: SOME KEYS TO FAILURE

# Body dysmorphic disorder (BDD)

Newton and Cunningham<sup>6</sup> presented advice for management of patients with unrealistic expectations of treatment. Some may fall into the category of BDD. The estimated prevalence of BDD in a survey of adults seeking orthodontic treatment was 7.5%<sup>7</sup> compared with an estimated prevalence in community samples of 0.7-3.0%<sup>6</sup> and 10% in patients seeking orthognathic surgery.8 It is therefore likely that clinicians will come across such patients from time-to-time but recognition of such patients is important as not only is it much more likely that they will never be satisfied with an outcome but can even become suicidal. The reader is referred to NICE guidance9 (2005) for further details and advice on recognition of such patients (available at: http://www.nice.org. uk/guidance/cg31).

# Appliance types – selling reality versus selling

Newton and Cunningham<sup>6</sup> highlighted that the key aspect to managing patient expectations is communication. This aspect is critical in practice management terms when many new patients are given very short appointments and part of these appointments are delegated to auxiliary staff with the aim of 'selling treatment'.

Agreeing the type of appliance needed for the desired treatment change is often a key part of the treatment planning process and consent procedure. Simply promising adults that the appliances will be aesthetic is not satisfactory. Our patients deserve an honest description of the equipment that will be necessary to achieve the agreed goal. Marketing materials produced by orthodontic appliance manufacturers are most often very misleading in terms of the appearance of the appliances. Many adults are keen on removable aligner style appliances, but when the commitment to time and the impact of normal daily habits are discussed realistically, they often realise that they related removable appliance to 'night time only' wear and this will not suffice for safe and predictable tooth movement.

Similarly lingual orthodontic appliances can easily be presented as the optimal appliance for aesthetics, but they need to be accompanied with an explanation of the impact on eating and speech and possible limitations on treatment outcomes as well as any need for labial auxiliaries etc to achieve the desired result. In other words it is quite easy for clinicians to 'sell' aesthetics to adult patients but we should be obliged to give our potential patients a realistic 'picture' of what they may look like and experience during the treatment not simply on the day of fitting the appliances. Equally the need for compliance-demanding elastics should be documented in the treatment proposal, presentation and consent process.

# PERIODONTAL CONSIDERATIONS BEFORE, DURING AND AFTER ORTHODONTIC TREATMENT

It is not uncommon to receive referrals for orthodontic treatment where the patients are not periodontally stable. The responsibility for ensuring that a patient is periodontally stable and therefore safe to receive orthodontic treatment seems, surprisingly, to be a grey area.

The prevalence of periodontal disease has been regularly monitored in the United States by the Centers for Disease Control and Prevention (CDC). Based on the latest patient survey which for the first time recorded a full mouth periodontal examination (with six probing sites per tooth excluding the third molars) they concluded that 47.2% have mild, moderate or severe periodontal disease.<sup>10</sup>

#### PERIODONTAL SCREENING BEFORE ORTHODONTICS: LITIGATION AND GUIDELINES: USA VERSUS UK

In the States the most common malpractice claims for orthodontists are claims related to periodontal problems that develop or exacerbate during orthodontic treatment.11 The American Association of Orthodontists (AAO) and the American Academy of Periodontology (AAP) established a task force, which recently agreed new guidelines for orthodontists considering starting treatment for adult patients. They recommend that all patients should have vertical bitewing X-rays as well as peri-apical X-rays of the anterior teeth before starting treatment. In addition to this a full pocket chart of all teeth would be considered reasonable information as a baseline. These could be carried out by either the referring clinician or the orthodontist but the orthodontist should request that, in the USA, these records were present and evaluated as part of the orthodontic records. They advised against using

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Fig. 2 Intraoral images of patient with moderate to severe periodontal disease after periodontal treatment. The patient's maintenance programme is vastly improved and limited orthodontic treatment could be considered for the upper arch teeth. The bone loss on the lower teeth is so severe that orthodontics is likely to be unsafe for the patient

panoramic X-rays or CBCT images to screen for periodontal disease.

The AAO/AAP task force suggested that the new guidelines could be the foundation for an improved collaboration between dentist, periodontists and orthodontists. The working party further recommended the use of the web based perio assessment tool PreViser for the evaluation of all potential patients as this would standardise the reporting between the clinicians as well as providing an easy to understand report of the individual patient's periodontal status and suitability for orthodontic care.

In the UK there are currently no agreed guidelines for periodontal screening before commencement of orthodontic treatment in adult patients. In contrast, the British Society of Paediatric Dentistry and The British Society of Periodontology (BSP) recently agreed guidelines for screening of children and adolescents using a simplified BPE (basic periodontal examination) and stated that all children should have this before referral for orthodontic treatment.12 The British Society of Periodontology guidelines13 recommend that all new patients in general practice should have a BPE and if any teeth score grade 4 (probing depth >5.5 mm) the patient should have a full pocket chart of the dentition.



Fig. 3 Intra-oral photos of a 38-yearold female referred by the periodontist for orthodontic treatment. Tooth 44 was extracted in childhood

Orthodontists generally obtain an OPG (Figs 2-3) and in some cases a lateral cephalogram as part of the diagnostic material. They frequently do not have the equipment necessary for obtaining peri-apical and other small images. It would be in the patient's interest if the general dentist and orthodontist share all radiographic images avoiding duplication of exposures and improving the diagnostic process. Whether the radiographic guidelines in the UK would allow for vertical bite-wings (minimum two per side) and at least six periapical X-rays to verify attachment levels is not clear. In contrast to the American recommendations, Corbet<sup>14</sup> suggested that the panoramic X-ray is a good initial screening tool and where appropriate additional images should be taken on the basis of clinical findings and indications from the panoramic X-ray.

However, with regard to actual treatment of periodontal disease, it is accepted that this must be *fully controlled* not only before any orthodontic treatment but also *during* the treatment *and* long-term (for years following the orthodontic treatment). The latter is also associated with the need for indefinite retention (see below) and hence the indefinite need for the patient to maintain a fully controlled, periodontal condition albeit in a previously diseased, mouth. This is because where bone loss has occurred – which has resulted in the drift of teeth for which the patient has sought orthodontic treatment – the end result will always be even more unstable than 'normal'



Fig. 4 The OPG of the patient in Figure 2 showing generalised attachment loss. The increased bone loss on tooth 14 may be related to a perio-endo lesion



Fig. 5 Moderate and mainly horizontal bone loss is observed. The treatment plan included upper and lower fixed appliance therapy with extraction of tooth 14, 24, 28 and 34

orthodontic treatment as the attachment loss is permanent. In the UK, while the periodontal condition is ultimately the patient's responsibility, the responsibility for diagnosis and treatment would routinely lie within the GDP's remit (or periodontist if the patient has one) while monitoring the condition during treatment would be the specialist orthodontist's role and/or periodontist where applicable (Figs 4-7). Post-orthodontic treatment, it is likely that the patient (who is now wearing retainers for the long-term and potentially indefinitely if dental health allows), will once again become the responsibility of the general dental practitioner once they are discharged from the orthodontist, unless some other agreement has been made. This may be satisfactory providing the general dental practitioner has the competence to manage this situation but clearly, this cannot always be assumed and adds the potential for further problems to befall the patient if all these aspects have not been dealt with before the patient embarks on orthodontic treatment that is, at the treatment planning and consent stage.

#### POST TREATMENT MANAGEMENT OF RETENTION WITH REDUCED PERIODONTAL SUPPORT

There is much that should be discussed with patients with regard to this aspect. Retention

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Fig. 6 Levelling and alignment phase of treatment using lacebacks to help correct the midline in the lower arch. Tooth 42 is not engaged in the alignment wire as this would cause unwanted movement of the root



Fig. 7 Pre and post treatment photos of patient in Figures 4–6. To improve gingival margin display in the upper labial segment tooth 21 was intruded and received a post treatment composite build up at the same time as the veneer on tooth 12 was replaced. The patient is maintaining the oral health with an individually designed maintenance programme

of orthodontic patients is covered elsewhere in this special issue.

Therefore, suffice it to say that the vast majority of adult patients are surprised when told that the orthodontic correction will not be long lasting without retention. It is, however essential that all patients are aware of this requirement well before their orthodontic treatment ever starts. As previously noted, management of patient expectations is paramount and it is therefore essential patients have a realistic idea of what lies ahead of them. For consent to be valid, it is important that patients understand that there is not only the potential for relapse that retainers can help manage but that they at least offer the potential for limiting (though not necessarily eliminating) long-term age changes (often crowding) which can occur in any individual with age, regardless of having received orthodontic treatment or not.

One of the challenging tasks is to explain the difference between post-treatment relapse and age-related changes. There is some evidence to suggest that most changes in incisor irregularity will have occurred by the middle of the third decade<sup>15</sup> but it will certainly continue throughout life. In the case of periodontally compromised dentitions, then the issues associated with 'indefinite retention' become significantly more complex both with regard to which practitioner takes responsibility for monitoring the retainers and longterm dental health but also ensuring, so far as possible, that the patient understands the increased risks to their gum and tooth health and their responsibilities in preventing periodontal disease progression. In some cases, retention may have to be abandoned if the teeth are to be maintained but of course this will mean the patient has to accept a recurrence of the malocclusion.

#### RELEVANCE AND MANAGE-MENT OF TMDs WITH RESPECT TO ORTHODONTIC TREATMENT IN THE LIGHT OF NEW DEVELOPMENTS

Adults differ from children and may often present a range of different issues but there are obviously overlaps. One such is that of temporomandibular disorders (TMDs).

Frequently seen as an adult problem, this is not entirely true as TMDs tend to start in adolescence but become increasingly common with age<sup>16</sup> but there has been much confusion over the role orthodontics or the occlusion etc has in the causation and/or treatment of TMDs. Unfortunately, this has led to a number of medico-legal issues both in the US and UK with several dentists in the UK coming under severe scrutiny by the GDC with regard to their practice and how and why they applied it to their patients. Reasons for this confusion may be related to factors such as:

- There is a close match between the population who want braces (the majority are females); and those that get TMDs (where the majority are also females), making it easy to jump to conclusions
- Insufficient appreciation of the relevance of the epidemiology of TMDs to their causes: the cause of any disease or condition should also 'explain' the epidemiology
- Simplistic understanding of the rigour needed to establish cause and effect
- Poor research: conclusions drawn from small, poorly devised (often uncontrolled) studies or which were based on opinion and anecdote
- Lack of critical appraisal skills in researchers and clinicians to evaluate research findings and thus their potential validity
- Lack of awareness of new developments in medical/dental research. For example, chronic pain conditions may affect areas of the body other than around the jaws and may have factors in common which are important to take account of (comorbid conditions)

• Failure of clinicians to translate new evidence into action, for example, through lack of continuing professional development or perhaps due to financial conflicts of interest.

A very important point was made by Stohler and Zarb<sup>17</sup> and is embedded in the policy statement of the AADR 2010:<sup>18</sup>

'It is strongly recommended that, unless there are specific and justifiable indications to the contrary, treatment of TMD patients initially should be based on the use of conservative, reversible and evidence-based therapeutic modalities. Studies of the natural history of many TMDs suggest that they tend to improve or resolve over time. While no specific therapies have been proven to be uniformly effective, many of the conservative modalities have proven to be at least as effective in providing symptomatic relief as most forms of invasive treatment. Because those modalities do not produce irreversible changes, they present much less risk of producing harm. Professional treatment should be augmented with a home care programme, in which patients are taught about their disorder and how to manage their symptoms.'

This view is supported even in the most recent literature (see Romero-Reyes and Uynaik, 2014<sup>16</sup> for example). However, of course these 'low tech' treatments<sup>17</sup> may be cheaper and could pose an undeclared conflict of interest for some offering treatment.

#### NEW DEVELOPMENTS IN PAIN AND THE BIOPSYCHOSOCIAL NATURE OF PAIN

Findings in a variety of areas outside of purely 'dental' research are moving things on, well beyond the occlusion, and these findings are casting a new and fresh light on TMDs and other chronic pain conditions. As discussed below, they relate to pain pathways and what may influence these; the biopsychosocial nature of pain; pain physiology and imaging (functional MRI (fMRI); the genetics of pain and even aspects of sleep bruxism.

Not only is how we perceive pain being re-evaluated but even pain itself. This is a tremendously complex subject but some understanding of these fundamental new developments is vital as they directly impact on pain aetiology and in this case, chronic pain conditions such as TMDs. It is now recognised that there is much in common between various chronic pain conditions – including musculoskeletal disorders and including TMDs.

How and what individuals experience as pain can be influenced by their past experience/exposure and is not simply memory affecting expectation and anticipation. Using functional MRI (fMRI) it has also been shown that when subjects are exposed to painful heat (in the form of heated rods applied to the skin of the forearm), the parts of the brain which 'light up' are the same as those which 'light up' when exposed to only a simple illusion of heat pain (warm and cold bars applied to forearm skin, none of which alone will cause harm). This indicates that central brain processing is occurring which directly affects and modifies what the individual believes they feel as opposed to what they are actually feeling.<sup>19</sup>

Pain is far more than a simple nociceptive response: there is a considerable difference between nociception (the transmission of nervous impulses to the brain conveying tissue damage and which can only be perceived when conscious) and the pain experience of the individual (which will be the subjective response which will be influenced by genetic aspects; prior learning; psychological factors as well as socio-cultural influences). A similar but equally relevant difference lies between disease (an objective event which disrupts the body or organ by anatomical, pathological or physiological changes) as opposed to the illness the individual experiences which will vary from person-to-person (the subjective and personal experience of that individual). See Gatchel *et al.*<sup>20</sup> and references therein.

With regard to previous experience and prior learning, evidence is starting to indicate that childhood experiences will affect how and what pain is experienced and there is even an indication that what happens to pre-term neonates and the many pain episodes they may experience, may have lifelong effects and consequences.<sup>21</sup>

With regard to the re-evaluation of pain itself, research shows that pain is far more akin to perceptions of extreme thirst or hunger than merely a sensory response to a stimulus. Thirst and hunger are factors which can directly affect the health of the individual if no steps are taken by them to regain homeostasis (or equilibrium; Craig 2002;<sup>22</sup> 2003<sup>23</sup>). Similarly with pain: if no action is taken then stress may often be the outcome and when chronic, can have longterm consequences which affect how the organism responds in the future.20 This is due to long-term changes in the brain affecting pain perception. Specifically, this can lead to pain continuing long after the original stimulus has gone due to plastic changes within the brain. However, it is also thought that the response to stress is the release of cortisol. If production is prolonged, this can lead to impairments within the organism such as changes in the immune system and inflammatory responses, leading to compromised pain responses such as hypersensitivity (see Gatchel *et al.*, 2007<sup>20</sup> and references therein).

# WHAT CAUSES OUR PAIN RESPONSE?

# The role of genetic factors

New research is starting to suggest that some chronic pain conditions, such as TMDs, have an underlying genetic basis. The enzyme COMT (catecholamine-O-methyl-transferase) has been found to be involved in the regulation of levels of encephalins and catecholamines and has therefore been studied due to its likely influence on pain perception.

It has been found that individuals carrving a genetic variant of the gene encoding for COMT known as an LPS (Low Pain Sensitivity) may be up to 2.3 times less likely to develop a myogenous TMD than those with the HPS (High Pain Sensitivity) variant.24 The study comprised over 200 females (18-34 years) who were TMD-free initially and were assessed for generalised pain sensitivity and followed up for three years. The participants had blood tests for genetic testing and were assessed annually for symptoms and signs of TMD so that the incidence could be established. Ultimately, the sample developing a TMD (n = 15) was relatively small as would be anticipated.

The LPS variant results in much higher levels of COMT enzyme activity than for APS (average pain sensitivity) or HPS. The authors concluded that these three variants (haplotypes) accounted for 11% of the variability in pain perception found in this study. This may not seem high but the authors point out that other haplotypes exist and would also benefit from study. Furthermore, it is very likely that combinations of SNPs (single nucleotide polymorphisms) within haplotypes would have synergistic effects on protein function - thus potentially having a much greater effect. The authors acknowledge that pain is influenced by many factors, but the findings (which require replication by others and using larger samples) have clear implications for the management of TMDs in the future. For example, drugs could be developed which act on such pain-inducing pathways.

# The relevance of comorbid conditions and psychological status

Definition of comorbidity is somewhat complex (see Valderas *et al.*,<sup>25</sup> for example) but simply put, could be defined as medical condition/s existing simultaneously but independently with another condition in a patient (this is the older definition). Or, they may be conditions that cause, or are caused by, or are otherwise related to another condition in the same patient (this is a newer, nonstandard definition and less well-accepted).

TMDs may therefore be only part of the overall pain condition a patient has. For example, tertiary care patients exhibit 'comorbid conditions' much more frequently in areas of the body other than the face and their condition is relatively seldom limited only to the face. Furthermore, while some conditions might be trivial, others may include depressive illness, sleep disturbances and widespread pain, all of which could affect overall illness severity.<sup>26</sup>

Several studies have shown that low back pain maybe one such condition (see Wiesinger *et al.*, 2007<sup>27</sup>) although again, more carefully controlled studies, using the most valid and reliable assessment indices, are probably required to establish this beyond doubt with regard to TMDs.

Dentists seeking to 'cure' such TMDs will probably fail where they are unaware and/ or unable to deal with the wider, more complex perspective and in any case, as discussed below, the term 'management' may be more appropriate than 'cure'. Such associations are acknowledged for other pain conditions.<sup>20</sup>

The psychological status of individuals is also important. It has often been surmised that TMDs bring about depression but while this certainly can occur, there is also evidence that depression predisposes to TMDs. Slade *et al.*,<sup>28</sup> followed up 171 healthy females for up to three years; 8.8% developed first onset TMD; depression, perceived stress and mood were associated with pain sensitivity and were predictive of 2-3 fold increases in risk of TMD. This risk remained unchanged even after adjustment for the COMT haplotype indicating that psychological factors work independently of the COMT haplotype.

Gatchel *et al.*<sup>20</sup> have summarised other evidence with regard not only to chronic pain conditions being associated with depression but also vice versa. They and others have also questioned why not all chronic pain patients are depressed. They cite studies that have examined this question and have concluded that those patients who believed they could still function and could manage some control of their pain were less likely to become depressed.

This brings us to 'treatment' of TMDs. Mercuri<sup>29</sup> has summarised the situation very well and highlights how the word 'treatment' of TMDs is a misnomer. The word 'management' would be better. Many medical conditions cannot be cured but they can be managed. TMDs are no different. There is no guaranteed treatment for every patient with a TMD but there are various managements which are conservative and the interested reader is referred to this publication.

Even aspects of bruxism are no longer being seen as having an occlusal cause: evidence is building up to suggest that sleep bruxism is mainly centrally generated within the brain and will occur regardless of the patient's occlusion. It occurs in predisposed patients and 'treatment' of the occlusion is irrelevant – save perhaps for the fitting of a biteguard to prevent the patient damaging their own teeth.<sup>30</sup>

With regard to the use of orthodontics to treat TMDs, a recent Cochrane systematic review has concluded there is no evidence to support this<sup>31</sup> while other reviews of the literature have not substantiated a role for orthodontics in the causation of TMDs either (Luther 1998a,<sup>32</sup> b,<sup>33</sup> Luther 2007a,<sup>34</sup> b;<sup>35</sup> Mohlin *et al.*, 2007;<sup>36</sup> Michelotti and Iodice, 2010;<sup>37</sup> Türp and Schindler H, 2012<sup>38</sup>) which is perhaps not surprising, given the developments in research noted already but also the relatively low standard of study which have been undertaken.

In the light of all these developments, what then is the advice for practitioners who are going to treat patients with malocclusions, some of whom will develop a TMD or may have a TMD when they attend for orthodontic assessment?

#### ORTHODONTICS AND TMDs: PRACTICAL ADVICE FOR THOSE PROVIDING ORTHODONTIC TREAT-MENT (BRITISH ORTHODONTIC SOCIETY, ADVICE SHEET, 2012<sup>39</sup>)

In essence, this advice indicates that:

1. At diagnosis, patients should be assessed for TMDs and a history taken where there is a positive finding

2. The positive findings should be discussed frankly with the patient including a discussion of TMD aetiology – bearing in mind that the clinician may not be aware of any preconceptions the patient may have or have been given by someone else, including the media with regard to TMDs

3. If braces are offered, then it should be made explicit that this is to treat the malocclusion – not the TMD. Ensure the patient is fully aware of this and explain that their condition may get worse, better or stay the same regardless of any braces treatment. However, if the condition becomes bad enough, then appropriate referral may be beneficial

4. Patients who develop a TMD during braces treatment should have the matter frankly discussed with regard to the causes of TMDs; possible conservative management options; possible resolution (including spontaneously) or recurrence and possible need for referral if simple measures such as jaw rest and limiting strain do not seem to help. Unfortunately, the issue of referral may be problematic as while referral to a hospital department such as Oral and Maxillofacial surgery may be possible, it is acknowledged that ideally, referral to a pain clinic would be the ideal but such clinics are currently scarce in the UK.<sup>40</sup>

# CONCLUSIONS

The orthodontic treatment of adult patients can and often does present significant challenges and complex problems. In this article, we have touched on only a limited number of these issues but they may all directly impact on:

- Treatment success (patient expectations)
- Long-term dental health (periodontal issues)
- Whether treatment is even indicated (TMD issues).

'Success' of treatment is relative. The ability of treating clinicians to anticipate problems that may develop in a specific adult patient (so far as is possible) and then to plan and explain their relevance and potential impact on patients – to allow valid consent – is paramount.

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