An introduction to dento-legal issues and risks in orthodontics

A. J. Ireland,*[1] D. Willmot[2] and N. P. Hunt[3]

IN BRIEF

- Explores the risks both patients and practitioners are exposed to in orthodontics.
- Highlights potential dento-legal issues in orthodontic practice.
- Outlines information regarding orthodontic training and advertising in orthodontics.
- Stresses the importance of discussing and documenting risks with the patient before, during and after treatment.

GENERAL

Orthodontic treatment is not without risk. This article aims to look at some of the dento-legal issues surrounding orthodontic treatment, the risks to both the clinician and the patient, and how some of these risks can be mitigated.

INTRODUCTION

Orthodontic treatment is not without risk, be it for the patient or the practitioner. For the patient there are well defined risks, even when the treatment carried out is both appropriate and skilfully executed. For the practitioner there are also risks, but for different reasons and these can result in dento-legal issues. This article aims to explore some of these risks, starting with the dento-legal issues and then describing some of the specific risks of orthodontic treatment for the patient.

DENTO-LEGAL ISSUES

When it comes to dento-legal issues surrounding orthodontic treatment, there are three broad categories which can be considered. There are those centred on the treatment itself which may be related to outcome, including competency to perform the treatment. There are issues of process that may be related to record keeping and which may accompany any complaint about treatment. Finally, there are issues of probity which may be related to making false claims, financial or otherwise. In this article we will describe the first, namely issues centred on the treatment and competency.

Whenever we provide treatment for our patients, in which ever sphere of dental practice, it is incumbent on us as practitioners to do the very best for our patients and to abide by the GDC's standards for the dental team.[1] These standards, although detailed and relevant to orthodontic practice, cannot be prescriptive for the myriad of treatments and providers of such treatments. The British Orthodontic Society is in the process of compiling a document to complement the GDC's standards as they relate specifically to the practice of orthodontics.

Patient complaints can follow a number of different routes including directly to the clinician, practice or employing authority. Indeed many are dealt with satisfactorily in-house and proceed no further. It is recommended that speed, sympathy and a willingness to listen are adhered to in such circumstances in order to reach a speedy resolution.[2] If the issue is not resolved at this point then the complaint may progress, the patient may obtain legal advice and a formal complaint is lodged that may allege a breach of duty of care or causation. A breach of duty being where the standard of care falls below that of what might be expected, and causation being loss or damage resulting from the less than satisfactory care. Alternatively, and in recent years more frequently, patients may complain directly to Primary Care Organisations, the Dental Complaints Service in respect of private care, or to the GDC. In the latter case their complaints may be dismissed, be referred to a GDC Investigating or Interim Orders Committee, following which it may proceed to a GDC Practice Committee and a public hearing before the Fitness to Practise panel. Whatever happens, at this point it is perhaps worth considering some of the common reasons why patients might complain about their orthodontic treatment. These include:

- Failure to carry out and/or record an adequate clinical assessment of the patient, leading to a failure to provide adequate diagnosis and/ or treatment planning
- Failure to recognise underlying problems such as an unfavourable skeletal relationship, poor tooth quality, for example pre-existing caries, short roots, or pre-existing periodontal disease
- Failure to obtain valid consent, for example failure to explain all of the possible treatment options available to treat the malocclusion, both limited and comprehensive, including no treatment at all, thereby preventing the patient from making an informed choice
- Failure to provide written treatment plans detailing all aspects of treatment, including the necessary appliances, retainers, timescales and where relevant, costs
- Inappropriate treatment, such as inappropriate extraction or non-extraction treatments
- Treatment not achieving the desired outcome to meet the patient's expectations, for example short course or aligner treatments that fail to meet expectations and subsequently require more extensive orthodontic treatment.

It can be seen that these common complaints may be interrelated. The GDC has issued its Standards for the Dental Team.[1] Of particular relevance here are subsections:

- **Standard 2.3:** give patients the information they need, in a way they can understand, so that they can make informed decisions
- **Standard 3.1:** obtain valid consent before starting treatment, explaining all the relevant options and the possible costs
- **Standard 6.4:** only accept a referral

[1]School of Oral and Dental Science, University of Bristol, Lower Maudlin Street, Bristol, BS1 2LY; [2]The School of Clinical Dentistry, University of Sheffield, 19 Claremont Crescent, Sheffield, S10 2TA; [3]Department of Orthodontics, UCL Eastman Dental Institute, 256 Greys Inn Road, London, WC1X 8LD
*Correspondence to: Professor A. J. Ireland
Email: tony.ireland@bristol.ac.uk

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or delegation if you are trained and competent to carry out the treatment and you believe that what you are being asked to do is appropriate for the patient
- **Standard 7.1:** provide good quality care based on current evidence and authoritative guidance
- **Standard 7.2:** work within your knowledge, skills, professional competence and abilities.

In addition to these standards, the GDC has also issued guidance for each of the standards and at this point it is worth looking specifically at guidance notes for standards 3.1 and 7.2, which respectively set out the explanations that should be routinely provided to patients when seeking their consent, and hint at who might and might not be considered competent to carry out orthodontic treatments. Guidance for standard 3.1 states:

Guidance 3.1.3: you should find out what your patients want to know as well as what you think they need to know. Things that patients might want to know include:
- Options for treatment, the risks and the potential benefits
- Why you think a particular treatment is necessary and appropriate for them
- The consequences, risks and benefits of the treatment you propose
- The likely prognosis
- Your recommended option
- The cost of the proposed treatment
- What might happen if the proposed treatment is not carried out
- Whether the treatment is guaranteed, how long it is guaranteed for and any exclusions that apply.

It is worth stressing the importance of making written detailed notes which summarise all that has been discussed with the patient, including the use of patient information resources such as patient leaflets (Fig. 1). If something is not written down then from a legal viewpoint it may be concluded it didn't happen. Failure to keep detailed, legible and contemporaneous notes is a common charge brought against practitioners at GDC hearings.Guidance for Standard 7.2 states:

Guidance 7.2.1: you must only carry out a task or a type of treatment if you are appropriately trained, competent, confident and indemnified. Training can take many different forms. You must be sure that you have undertaken training which is appropriate for you and equips you with the appropriate knowledge and skills to perform a task safely.

Guidance 7.2.2: you should only deliver treatment and care if you are confident that you have had the necessary training and are competent to do so. If you are not confident to provide treatment, you must refer the patient to an appropriately trained colleague.

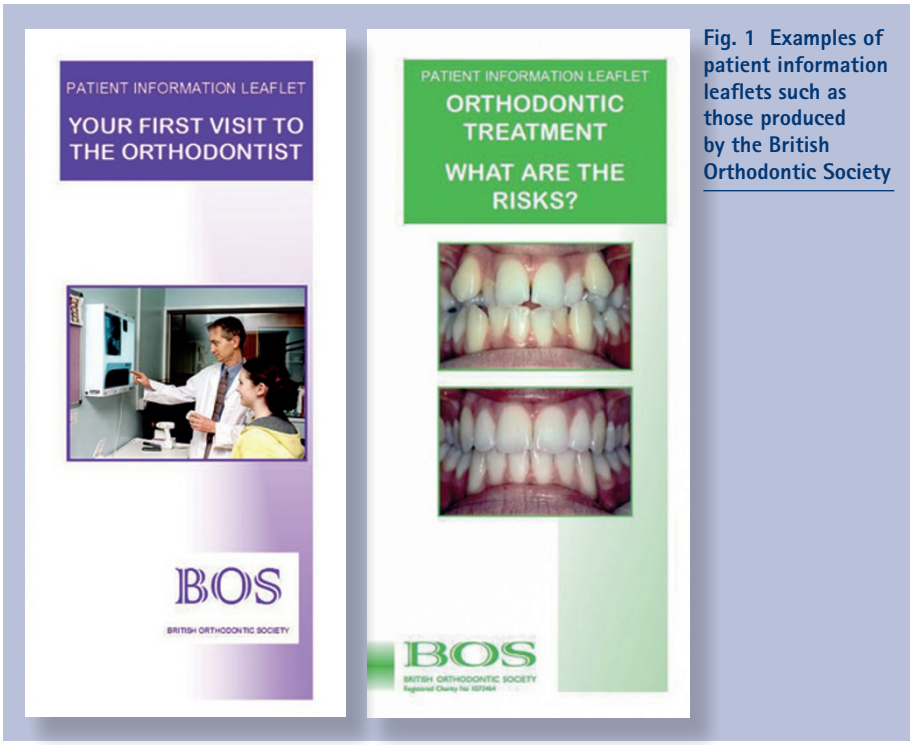

Fig. 1 Examples of patient information leaflets such as those produced by the British Orthodontic Society

Therefore, like any other form of dentistry, in order to carry out orthodontic treatment a practitioner must be trained and consider themselves competent to carry it out. In addition, they must be able to obtain informed consent, which is a continuous process throughout treatment and not a one-off event at the start.[3] The consent to treatment process also requires adequate training if the practitioner is not only to provide adequate explanations about the available treatment options at the start, but also appropriate advice during treatment, particularly if the plan requires modification part way through. At this point it is worth considering the levels of orthodontic training available.

Currently, orthodontic training can take the forms listed below:

Undergraduate

The GDC *First Five Years*[4] and *Preparing for Practice*[5] state that at qualification a practitioner must be familiar with contemporary treatment techniques in orthodontics; be competent at carrying out an orthodontic assessment, including an indication of treatment need; be able to be competent at managing appropriately all forms of orthodontic emergency, including referral when necessary and be familiar with the limitations of orthodontic treatment.

Short courses

Short courses of perhaps one or two days as a qualified dentist in appliance techniques, which may or may not be supplemented by online help, but does not include longitudinal clinical supervision/ training.

Part-time training

Part-time longitudinal, supervised clinical and academic training usually comprises half a day per week of clinical treatment supervision over a period of two years, with approximately 8 to 10 days of didactic teaching and practical instruction. The training is in straightforward upper and lower fixed appliance therapy and leads to the practitioner being able to sit the nationally recognised Diploma in Primary Care Orthodontics.

Full-time training

Three calendar year full-time training on a recognised postgraduate deanery led, university based training programme. This will give eligibility to sit a Royal College of Surgeons Membership in Orthodontics examination, the award of a CCST (Certificate of Completion of Specialist Training) and the use of the title Specialist in Orthodontics. This training comprises three years of full-time clinical treatment and academic supervision.

Full-time post CCST training

Full-time post CCST training for a minimum of a further two calendar years, following which the specialist orthodontist can sit the ISFE (Intercollegiate Speciality Fellowship Examination), be awarded the Fellowship in Orthodontics of one of the Royal Colleges

and be eligible apply for a hospital consultant post.

Now that the different levels of orthodontic training and competency have been considered, it begs the question, who of should do what? The ideal would be for all patients to be treated by a specialist, but when funds for healthcare are finite, this is plainly impractical and would be a poor use of resources. Currently up to 40% of orthodontic treatment in the UK is carried out by non-specialists, as the number of specialists in this country is low compared to many other developed countries.[6] Not only are there too few specialists, but their distribution within the UK is not uniform,[7] meaning the specialist to population ratio can vary greatly. Arguably, the most difficult aspects of orthodontics are diagnosis and treatment planning, which should not be considered a solitary event. Initial treatment plans frequently require modification during an average 18–24 month course of orthodontic treatment, and so a reassessment of treatment progress should be made at each visit by a competent clinician.

Undergraduate training alone does not equip the dentist to carry out much other than basic diagnosis, emergency relief and referral. Short courses can provide a practitioner with a basic understanding of a particular treatment, but may be associated with an increased risk of things going wrong. This is because the practitioner may neither have sufficient skill to recognise when treatment is going awry, nor how to rectify the situation when it does. Practitioners should also remember that whenever treatment plans for courses of treatment are provided by a third party such as a laboratory service or another, perhaps remote clinician, it is still the treating clinician who will be responsible and therefore liable in the event treatment fails and the patient makes a complaint.[8] Are these risks real or rumour? One of the defence societies has reported that most of the complaints they deal with concerning orthodontic treatment arise from treatment provided by non-specialists, largely as a result of poor diagnosis and treatment planning.[9] This is somewhat worrying if one considers that most orthodontic treatment is provided by, or is supervised directly by, specialists and that these treatments are going to be more complex and therefore more difficult to complete to both the clinician's and the patient's satisfaction.[10] It would seem the risks of short course treatments without longitudinal supervised clinical training are indeed real. As a result, the British Orthodontic Society is in the process of publishing standards guidelines for those practitioners undertaking short orthodontic courses, as well as guidance for providers and organisers of such courses. In the interim, one of the UK Faculties of Dental Surgery has already made available some guidance on this topic.[11,12]

It is known that orthodontic treatments provided by specialists are likely to take less time and result in higher quality treatment than treatment carried out by generalists,[13] but what about DES (dentists with enhanced skills)? DES are not specialists but have undergone two years of part-time training with longitudinal clinical supervision. A number of publications have shown that following this extended part-time training, DES are able to achieve very good treatment outcomes when judged using the PAR index[14,15] and that this is also related to treatment being carried out using fixed rather than removable appliances.[16] The academic training and longitudinal clinical supervision not only enhances practical skills, but perhaps equally importantly diagnostic skills are also improved, in particular knowing when to treat and when to refer.

Another member of the orthodontic team not discussed so far is the orthodontic therapist. Worldwide, therapists have been successfully treating orthodontic patients for many years, but have only been able to practise more recently within the UK.[17] In order to reduce the dento-legal risks of such working, the British Orthodontic Society and the Orthodontic National Group have issued guidelines for practice.[18] These guidelines describe the scope of orthodontic practice as outlined by the GDC and also describe the desirable degree of supervision. They state that 'whenever practicable it is best that patients are seen with the supervising dentist present. It is obvious that this is not always practical or desirable, but the supervising dentist should see the patient at least every other visit'. This would seem reasonable since the progress of orthodontic treatment is often difficult to plan in detail, visit by visit, over a normal 18–24 month period of treatment and each visit requires reassessment by a competent clinician.

ORTHODONTIC RISKS

So far we have considered risk principally from the point of view of the operator. It is now worth considering some of the other risks, in this case the iatrogenic risks of orthodontic treatment, which should be discussed when seeking consent to treatment. Iatrogenic risks are numerous but can be classified as follows:[19]

Extra-oral

Direct trauma

Perhaps the most extreme risk of trauma is associated with the use of headgear. There have been reports of patients losing an eye as a result of a penetrating eye injury from a headgear facebow, due to bacterial inoculation into the eye from the end of a facebow that had previously been in the mouth.[20] As a result, the British Orthodontic Society has published guidance that any headgear use should be accompanied by the provision of at least two safety devices.[21] It is also important patients are warned of the risks and what to do and what not to do when wearing headgear. It is perhaps worth mentioning at this point that like most dental procedures, orthodontic treatment is usually carried out with the patient supine, in which case it is important the patient wears eye protection.

Allergies

Allergies such as nickel sensitivity are quite common. Fortunately intraoral nickel allergy is rarely encountered, however extraoral nickel allergy is much more common and can be a problem when wearing headgear made from strapping with metal studs. This is usually alleviated by covering the studs where they come into contact with the skin. It is important to elicit any history of allergies during the initial consultation and to update the medical history during a protracted course of treatment.

Disorders of the temporomandibular joint

There is little relationship between orthodontics and temporomandibular joint disorders (TMD). Orthodontics cannot be relied upon to cure TMD and likewise does not appear to be associated with its development.[22,23] This point should again be discussed with the patient before starting any orthodontic treatment. It is important to record if signs or symptoms of TMD are or have been present previously.

Adverse changes to the patient's profile

There have been debates over decades as to whether or not teeth should be extracted as part of a course of orthodontic treatment. In particular there has been a debate as to whether or not extraction treatments lead to undesirable flattening of the patient's profile. It has to be said that extractions are usually planned due to the presence of crowding, often moderate to severe, and where the posterior retraction of the incisors as a consequence is likely to be less. Whether or not extractions are performed it should be remembered that some flattening of the profile is normal with increasing age, most probably due to continued growth of the mandible well into adulthood.[24,25] It is

therefore important to explain such changes during the consent process and in order to meet the patient's expectations of any planned treatment.

Intra oral

Soft tissue damage

- **Direct trauma and pain:** these are almost inevitable side effects of orthodontic treatment and every care must be taken to reduce the traumatic areas on an appliance (Fig. 2), be it removable or fixed. Even then patients will experience pain for three to five days following appliance fitting, or adjustment, as the teeth begin to move.
- **Gingival inflammation:** the development of gingival inflammation during orthodontic treatment is almost entirely due to a decline in the standard of oral hygiene. The amount of plaque and its formation have both been shown to be increased by the use of orthodontic appliances.[26,27] Associated with this is a concomitant alteration in the oral microbiota. It is known that the gingivae will largely revert to their pretreatment condition once the appliances are removed at the end of treatment. The same cannot necessarily be said for the oral microbiota, which can still show pathogenic alterations up to one year post treatment.[28]
- **Apical blood vessels:** there is seldom any long term damage to the apical blood vessels as a result of orthodontic treatment, but where the pulp of a tooth has already been compromised by previous trauma, there might be a slightly greater risk of pulpal death. There is no compelling evidence that orthodontic tooth movement can lead to pulpal death in otherwise healthy teeth.[29]

Hard tissue damage

Damage to the root of the tooth: although root resorption, like soft tissue damage and pain, is an almost inevitable consequence of orthodontic treatment, and is thought to affect almost all teeth that are moved using orthodontic appliances,[30,31] there are no accurate predictors of the susceptibility to root resorption during a course of treatment. Severe root resorption, where there is 4 mm or more of root loss, is reported to affect 1–6.6% of teeth during a course of orthodontic treatment.[30,32,33] However, even teeth which have undergone significant root resorption may have a good long term prognosis.[34,35]

Damage to supporting alveolar bone: all patients who undergo orthodontic treatment will lose some crestal alveolar bone.[36,37] Although this can sometimes result in a loss of up to 1 mm[38] in crestal height, it is not thought to compromise the longevity of the teeth. Occasionally there is rapid and more extreme loss of bone on one or more teeth and this can be due to unwanted labio-lingual root movements or pre-existing periodontal disease. Once again the loss of alveolar crestal bone should be discussed with the patient before treatment, and in the case of adults with a previous history of periodontal disease this is even more important. It is also important in the case of adult patients to have a baseline periodontal charting before orthodontics and for this to be revisited during the treatment. If bone loss proves to be severe then consideration should be given to cessation of the orthodontic treatment.

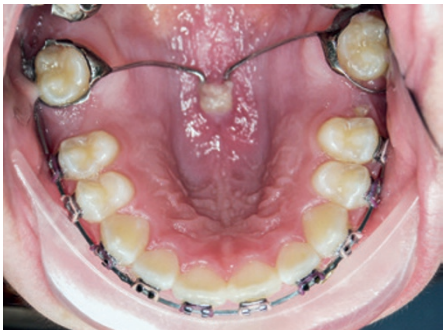

Fig. 2 Direct trauma to the palate from contact with a transpalatal arch

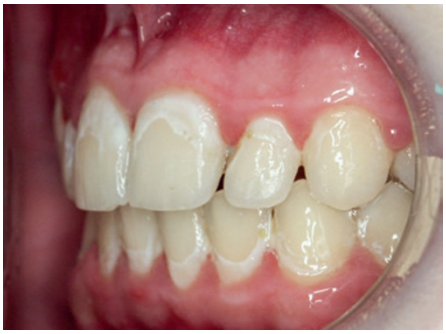

Fig. 3 Decalcification as a result of poor oral hygiene during fixed appliance therapy

Damage to the enamel of the tooth: whenever fixed appliances are bonded to the teeth using the acid etch technique, there is almost always some enamel loss as a result of etching, bonding and then debonding the appliance and final removal of the residual adhesive. Once again the risk to the teeth is small with the total enamel loss being somewhere in the region of 0–30 µm.[39] Enamel demineralisation and white lesions occur during, and sometimes remain after, orthodontic treatment with fixed appliances (Fig. 3), although such lesions can reduce by up to half their original size in the six months following treatment.[40] It is important patients are warned of this potential risk of orthodontic treatment and that every effort is made to prevent white spot formation. This will include advice on oral hygiene instruction and the use of fluoride preparations, before and during treatment, not only to prevent the lesions forming but also to avoid potential dento-legal problems. Of further concern is the potential abrasion of enamel as a result of contact with the opposing appliance. This is often seen on upper canines and can occur due to contact with the metal or ceramic brackets on the opposing teeth. More dramatic still is the potential enamel fracture on removal of ceramic brackets at completion of treatment. Manufacturers of these brackets have introduced various methods to reduce this risk, including the provision of a pre-stressed notch in the bracket base and the use of an intermediate polymer shim, also at the bracket base. Whenever ceramic brackets are utilised the patient should be warned of these risks during the consent process.

ORTHODONTIC ADVERTISING

The advertising of orthodontic services, whether in hard copy promotional material or digital web-based format, is covered by standard 1.3 of the GDC's *Standards for the Dental Team*.[1] Furthermore, clinical advertising also falls under the jurisdiction of the UK's Advertising Standards Authority. Standard 1.3 states that you must be honest and act with integrity.

Guidance 1.3.3 states that you must make sure that any advertising, promotional material or other information that you produce is accurate and not misleading, and complies with the GDC's guidance on ethical advertising.

The GDC produced their guidance on ethical advertising in 2012, but expanded this in 2013 to include further information on social networking and other marketing media.[1] More recently the British Orthodontic Society has published specific guidance on advertising in orthodontics, both in relation to the adverts produced for patients and the general public by clinical orthodontic providers, as well as those produced for orthodontists by commercial bodies. The underlying tenet throughout all these documents is that any advertisement must be 'legal, decent, honest and truthful' and must not in any way, directly or indirectly, mislead the public. Any claim made in an advertisement must be based on high quality evidence and be indicative that the person delivering the care has appropriate training and the necessary qualifications. Adverts that fall below these standards are unprofessional and may lead to investigations and potential fitness to practice proceedings at the GDC, as well as referral to

the Advertising Standards Authority for further investigation.

ASSOCIATED MEDICAL CONDITIONS

Orthodontic treatment is an elective procedure and whenever it is carried out the risks of the treatment must be weighed against the likely benefit to the patient. So far we have described some of the risks to the operator and the more localised risks to the patient. However, it is important not to become blinkered by the localised dental and orthodontic considerations, but also to consider the general health of the patient and any pre-existing conditions that might affect orthodontic treatment. A very good review of medical disorders and orthodontics has been written by Patel *et al.* (2009)[41] and it is not the intention to repeat the review here. However, it is worth emphasising that if a decision is made to go ahead with any orthodontic treatment that might be affected by, or indeed affects the medical condition then it is important the associated risks are explained fully to the patient before treatment as part of obtaining informed consent. Once again, this should be constantly reassessed during the course of the treatment.

CONCLUSIONS

It can be seen that the risks associated with orthodontic treatment are many and varied and that these risks can be minimised by adhering to the guidelines published by bodies such as the GDC, the British Orthodontic Society and the dental defence organisations. However, almost inevitably not all of the risks described can be avoided in every patient. It is therefore important that these risks are discussed with the patient as part of the process of seeking consent, that consent is seen as a process rather than a one off event and that any discussions are fully and legibly recorded in the patient records.

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