RISK MANAGEMENT FOR GENERAL DENTAL PRACTITIONERS PROVIDING ORTHODONTIC TREATMENT

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It used to be said that you could distinguish a British person from an American by their crooked teeth, but having a poor dental appearance is no longer as acceptable in the UK. This has led to an increase in demand for orthodontic treatment from adult patients.

To help meet this demand, orthodontic treatment systems have been developed which the manufacturers suggest are suitable for use by general dental practitioners (GDPs) with a minimum of training. This is attractive to both dentists and patients because it means that orthodontic treatment can be provided 'in-house' rather than the patient needing to travel to a specialist orthodontist. Orthodontic treatment can easily be combined with restorative treatment to produce the 'perfect' smile. It also offers a less interventional alternative to correcting misaligned teeth.

Some of these systems are aimed at only providing treatment to correct the alignment of the anterior teeth and these treatments have been termed "orthodontic treatment with limited objectives" by the British Orthodontic Society.[1] Other orthodontic systems, for example, Invisalign©, aimed at GDPs are capable of correcting aspects of a malocclusion. These systems are heavily marketed directly to patients. GDPs can therefore find themselves under pressure from patients to provide these types of treatments, and many patients will present with predetermined ideas about the type of appliance that they would like to wear.

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Unfortunately, however, many GDPs providing short-term orthodontic treatment may have found themselves the subject of a patient complaint.

The issues that patients most commonly complain about are:

- Their expectations of treatment not being met.
- Other tooth movements occurring during treatment which they were not expecting.
- Treatment taking longer than they were anticipating.
- Being unaware that retainers are to be worn for life.
- Relapse.
- No arrangements having been made for their on-going care, either if the practitioner has left midway through treatment or if they are wearing retainers.

Clinical issues[2] that have been reported as a consequence of orthodontic treatment provided by GDPs include:

- Loss of tooth structure during inter proximal reduction (IPR).
- Exacerbation of periodontal disease.
- Temporomandibular disorder (TMD).
- Devitalisation of teeth.
- Decalcification of enamel.
- Root resorption.

Issues arising from orthodontic treatment that have concerned the GDC[3] are:

- A poor standard of treatment having been provided.
- Record-keeping, particularly at the beginning of treatment, being inadequate.
- A failure to take appropriate radiographs during treatment.
- A failure to obtain valid consent for treatment.

This article discusses the measures that GDPs providing orthodontic treatment (for adults in particular) can put in place to reduce their risk of receiving a complaint.

The risk of many of these issues arising can be reduced by a thorough assessment and consent process.

Case assessment

Take a good history

It is important to spend time, when a patient first presents requesting orthodontic treatment, finding out what has led to this request and what the patient is hoping to achieve from treatment.

Undergoing orthodontic treatment as an adult is an uncomfortable, protracted and expensive process. In making such an investment, even the most realistic patient is likely to have high expectations about the ways in which straighter teeth will improve their life. For some patients however, these expectations are out of proportion. This often manifests as multiple requests to adjust the position of individual teeth as treatment progresses. The original treatment aims may then become lost as the clinician continually tries to please the patient. This may be as a result of the patient becoming increasingly over-aware of their teeth during the course of orthodontic treatment and subsequently making demands for particular tooth movements that a GDP may not be able to provide, either because of the appliance they are using or their lack of skill.

It is very difficult to identify such patients before treatment begins. It is therefore wise to assume that every patient could potentially have unrealistic expectations of orthodontic treatment and to take time at the first appointment to record the patient's wishes and expectations in detail. It may also be prudent to show potential patients what has been achieved for actual patients (after first

Figure 1: The risks and impact of resorption of roots may be more significant in some patients than others

gaining their permission to show their photographs) rather to rely on the idealised photographs provided by manufacturers of orthodontic appliance systems.

Undertake a thorough clinical examination

Many of the orthodontic systems that are available to GDPs aim to only correct certain aspects of the malocclusion; usually the alignment of the anterior teeth. It is necessary, however, for the clinician to undertake a thorough dental examination of the whole mouth and jaws before treatment begins and to record details of this in the clinical notes.

By systematically undertaking a clinical examination, you may become aware of clinical issues, for example, active periodontal disease or a high caries rate, which may render this patient unsuitable for orthodontic treatment. If significant wear facets are identified, or the patient shows other signs of bruxism, then this should alert you that the patient may be unsuitable for treatment using patented fixed appliances because of the increased risk of breakages.

Undertake an orthodontic assessment

A systematic examination of the patient's extra-oral skeletal pattern and malocclusion should also be undertaken and recorded in the clinical notes, together with an orthodontic diagnosis. By doing this you should become aware, if you have sufficient orthodontic knowledge, of occlusal factors – for example teeth in crossbite, which may make tooth movements more difficult, leading to an increased treatment time.

By undertaking an orthodontic assessment you should also be alerted, again assuming that you have sufficient orthodontic knowledge, to issues such as an underlying skeletal facial discrepancy, which has been compensated for by tipping of the incisors. It is important to identify these issues because if you attempt to align the incisors, for example, then it is likely that you will remove the inter-incisal anterior contact, which nature has worked hard to create, and the resulting occlusion will be unstable.

It takes knowledge and experience to be able to anticipate unwanted occlusal side-effects in orthodontic treatment and also to fully appreciate the impact of the underlying facial skeleton and soft tissue pattern on what can be achieved for a patient. Appliances are moving teeth in all three dimensions and therefore teeth can be moved into and out of interferences throughout the course of treatment. It is worth spending time at this point considering whether you are truly confident that you understand the aetiology of the patient's malocclusion and, as such, have sufficient knowledge and skills to treat the occlusal issues that they are complaining of.

Vouchers

Vouchers or coupons are increasingly becoming a way for patients to purchase branded orthodontic treatments at a discount. Your practice may be tempted to join such a scheme. The disadvantage of these pre-paid arrangements is that your clinical examination may reveal issues, for example, active periodontal disease, that may mean that the patient is unsuitable for orthodontic treatment.

Ideally, patients should be warned when they purchase a voucher for treatment that they may not be suitable for treatment, however this is beyond the control of the clinician. It is therefore important to have clear mechanisms in place to immediately refund a patient who is not suitable for the treatment to avoid them being financially disadvantaged as well as disappointed.

It is also important to appreciate when signing up for a voucher scheme that if a patient makes a complaint that can only be resolved by a refund of fees, then the total cost of the treatment will need to be refunded by the practice, not just the cost of the voucher.

Radiographs

Root resorption during orthodontic treatment is related to treatment time[4] and also the type of tooth movements that have occurred, and the application of excessive torque forces. Torquing the roots and tipping roots close to lower labial alveolar plate, for example, are known to be associated with an increased risk of root resorption.[5]

Some might argue that the risk of root resorption during short-term orthodontic treatments, such as those provided by GDPs, is low because the tooth-movements are mainly tipping. There is also further confusion because the current British Orthodontic Society (BOS) guidelines[6] for taking radiographs at the beginning of orthodontic treatment suggest that these may not be necessary in patients aged over 14 years.

Some teeth, for example teeth with spindly 'pipette'-shaped roots are at increased risk of root resorption.[7] These need to be identified before treatment begins so that the patient can be warned of this material risk of treatment. Furthermore, many adults who present for orthodontic treatment, particularly treatment with limited objectives, will have had fixed orthodontic treatment in the past. Almost all of these patients will have blunted roots as a consequence. Some, however, may have more significant root resorption, which has not caused any clinical

Figure 2: The consequences of poor oral hygiene and diet need to emphasised as a risk with fixed appliance therapy

problems. A further course of treatment may exacerbate this, to the point where the long-term prognosis of the tooth is compromised. It is therefore important to survey the roots of a patient radiographically to identify these issues before treatment is offered to these patients, and to consider other ways of improving their dental appearance.

It is also important to confirm dental health before orthodontic treatment begins. Middle-aged patients seeking orthodontic treatment may present with a heavily restored dentition. If a tooth requires a restoration midway through a fixed appliance treatment, this may delay treatment, as the appliance is removed and then replaced, which can lead to a complaint. Furthermore, if it becomes apparent during treatment that a tooth has a poor long-term prognosis, this may change the aims of the orthodontic treatment. It is therefore important to identify compromised teeth before treatment begins and to discuss with the patient whether a referral to a specialist orthodontist for advice about possible combined restorative/orthodontic approaches would be more appropriate.

A routine basic periodontal examination (BPE)[8] is essential, particularly of a patient who is unfamiliar to you. It is recognised that orthodontic tooth movements exacerbate active periodontal disease.[9] Taking a scanning radiograph to confirm the health of the roots and the teeth will provide an additional advantage of showing areas of periodontal bone-loss that may not have been revealed during the BPE screen.

Records

Another issue that is emerging following complaints against GDPs undertaking orthodontic treatment with limited objectives is the opinion that clinical photographs are sufficient to show the occlusion in 3D at the beginning of treatment. Such clinicians have therefore argued that there is no need to take impressions for dental study models or a 3D scan of the occlusion before beginning short-term orthodontic treatment.

This view seems to be supported by the BOS guidance on records,[10] which while referring frequently to study models in the list of clinical records that may be taken, does not specifically recommend that these should be taken for all patients. Study models are listed as items that may "complement" the written records.

Orthodontic treatment, even that aimed at achieving limited objectives, is a three-dimensional treatment. Intra-oral clinical photographs however only show the occlusion in two dimensions. Furthermore, it is challenging to obtain a good photograph of the buccal occlusion, and many anterior intra-oral photographs are taken with the patient posturing forward. If a patient then complains that the short-term treatment that they have received has changed the overjet, for example, these photographs provide limited evidence to defend such a claim.

Although taking impressions for study models is unpopular with patients, not taking a record of the occlusion, including a bite registration of the teeth in occlusion, makes it very difficult to defend a complaint from a patient that your treatment has not achieved its aims. Furthermore, having a 3D image of their occlusion available to talk through a patient's concerns and your proposed aims of treatment is invaluable in the consent process.

Some orthodontic aligner systems request that impressions are sent directly to them for conversion into a 3D image of the occlusion. Under these circumstances, many practitioners rely on these images as a record of the starting occlusion and do not take another set of impressions for hard copy study models. It is important to appreciate that the images that are created of the patient's baseline occlusion belong to the manufacturer of the orthodontic system. Many of these companies are based outside the UK and are therefore not subject to UK legislation. It may be difficult to obtain absolute proof that the image provided by the company is a true record of the baseline occlusion. It may therefore be prudent to also take another set of impressions as dental study models for the clinical records.

This is not to say that clinical photographs should not be taken before beginning orthodontic treatment with limited objectives. Some patients may present with enamel defects at the beginning of treatment with fixed appliances, which they may then claim was a consequence of your treatment. It is therefore important to have good quality images of the tooth surfaces before the brackets are bonded, to highlight these areas to the patient during the consent process and also to be able to defend against such a claim.

Similarly, complaints have also been received from patients who claim that short-term orthodontics has had a negative impact on their facial appearance. Although this can be a very subjective area, if you have not taken good quality profile and anterior extra-oral photographs of the patient before treatment began, it may be impossible to counteract such an accusation. Having 'before' and 'after' photographs of successful cases may also be advantageous when discussing treatment with prospective patients. It is important to obtain specific written consent from the patients who you have photographed for their images to be used in these discussions.

Consent

Many of the complaints that arise from orthodontic treatment with limited

objectives can be traced back to the consent process. This is compounded by GDPs relying on generic consent forms supplied by the manufacturers of orthodontic systems. The ruling in Montgomery vs Lanarkshire Health Board[11] has made it very clear however that for the consent process to be valid it should be based on a discussion about the risks of treatment that are pertinent to the individual patient. Judges also ruled that a reliance on a pre-written tick-box form to obtain consent from a patient is no longer acceptable.[11] It should be clear that presenting a generic form, signed by a patient, as confirmation that their valid consent has been obtained for treatment will leave the clinician vulnerable to a claim of negligence.

The consent process should include a detailed discussion of:

1. The specific aims of treatment.
2. The projected treatment time.
3. Other tooth movements which may occur as a consequence of the tooth movements that the patient is seeking (for example, the overjet increasing as retroclined teeth are straightened).
4. The risks and benefits to oral health of the appliance that is being proposed, in general terms.
5. The risks and benefits of the proposed treatment that are material to the individual patient.
6. The risks and benefits of interproximal reduction (IPR), if this is part of the proposed treatment plan.
7. The proposed retention regime and the time that retainers will need to be worn for.
8. The risks and benefits of the proposed retention regimen.
9. The arrangements for long-term monitoring and maintenance of retainers.
10. A discussion with the patient that relapse is considered to be material risk of any orthodontic treatment.
11. A further discussion with the patient about minor post-treatment changes occurring as a consequence of the ageing process.

The Law Lords in Montgomery vs Lanarkshire also ruled that the risks and benefits of alternative treatment options should be discussed with the patient, as part of the consent process.[11] Orthodontic treatment is rarely clinically necessary and, as such, the risks and benefits of the option of 'no treatment' should also be discussed with the patient and documented in the clinical notes.

As the options for care become more complex and diverse, engaging the patient in shared decision-making has become increasingly important. Quite simply shared decision-making means finding out what is important to the patient. Shared decision-making is the conversation that happens between a patient and their health professional to reach a healthcare choice together. This conversation needs patients and professionals to understand what is important to the other person when choosing a treatment.[12]

Shared decision-making fulfills the moral and regulatory imperative of involving patients in their care, but there is also compelling evidence that patients who are active participants in managing their health and health care have better outcomes than patient who are passive recipients of care.[13]

Since orthodontic treatment often extends over many months, relying on a one-off process for consent at the start of the treatment may not be sufficient. One study[14] noted that while patients recalled the type of appliance and the length of treatment, further questioning on risks demonstrated poor recall for important factors such as decay (with 36.8% recalling the information), root resorption (less than 21%), retention (56.3%) and length of retention (35%). Providing written information, leaflets and reinforcing some aspects of the consent process that are relevant to the particular patient may be needed during the treatment.

It is important to be aware that if the patient perceives that you are overstating the advantages of particular appliance system in these discussions, you may be subject to an accusation of having been "deliberately misleading"[15] in the consent process. Furthermore, as a GDP, you are unlikely to be considered by the GDC to have sufficient orthodontic knowledge or experience to be able to discuss the risks and benefits of all the possible orthodontic treatment options that may be available to the patient. An independent expert reviewing your consent process would therefore expect that as a GDP, you have discussed a referral to a specialist orthodontist with every patient who requests orthodontic treatment.

The risks involved in elective treatment including orthodontics are such that it is worth spending a considerable amount of time on the consent process. It is also good practice to give the patient a 'cooling off' period in which they are given time to go away and think about the treatment options that you have discussed with them. This may appear to be expensive, in terms of practice time, but attention to the consent process is likely to considerably reduce your risk of receiving a patient complaint and the anxiety that goes with it.

It should also become apparent that to be able to fully discuss the risks and benefits of orthodontic treatment, you need to be knowledgeable not only about the risks to dental health of moving teeth, but how moving one tooth may impact on the rest of the occlusion. Many GDPs have been the subject of a successful complaint because they have either not appreciated or have failed to warn the patient that a consequence of aligning the upper incisors, for example, is that the overjet will increase.

It is therefore worth taking the time, before offering a patient orthodontic treatment as a GDP, to consider whether you are fully aware of the occlusal consequences of your treatment. You should also consider whether you would be able to provide evidence that you had sufficient knowledge and skills to undertake this treatment,[16] if questioned by a GDC panel, for example.

GDPs are often recommended by indemnifiers to refund patients who have made a complaint against them about short-term orthodontic treatment because there is doubt about whether the GDP can be defended against a claim that they did not have sufficient knowledge, skills and experience to undertake the treatment. In this context

ensuring you have good evidence of orthodontic training, on-going CPD specifically tailored to orthodontics , audits including PAR scoring and also support from mentors is important.

Issues arising during treatment

Lack of experience also makes GDPs vulnerable to a successful complaint from a patient if issues such as frequent breakages or lack of tooth movement occur during the active orthodontic treatment process.

Specialist orthodontists are taught during their training that although patient factors are the most common cause of debonded brackets, one should also consider that there may be other factors involved, such as occlusal interferences. As discussed earlier, adult patients will have invested heavily in their orthodontic treatment and so, unlike rebellious adolescent patients, are unlikely to flout the advice they have been given about care of their appliances. If a bracket has debonded, for example, it is important to spend time identifying why this might have happened, rather than just re-cementing the bracket.

Similarly, it is important to record the tooth movements that have occurred at every visit, so that you are able to identify quickly if these are not as you would have predicted. There have been many reported cases, with aligner treatment in particular, in which clinicians have continued to provide the patient with the next aligner in the sequence, while failing to identify that tooth movements are not occurring as predicted. When the problem is eventually identified, many weeks of treatment may have been wasted, risking a complaint from the patient about the time that treatment is taking.

Managing and monitoring the progress of tooth movements is important, but equally knowledge and experience is needed to identify the possible cause of an issue arising during treatment. Some orthodontic systems encourage clinicians to join forums where they can discuss these issues when they arise. The difficulty with this type of mentoring is that, as the clinician, you cannot be sure about the knowledge and experience of the person providing the advice.

Furthermore, the person who has provided the advice has not examined the patient and so cannot be aware of all of the facts of the case. A GDC panel is unlikely to be persuaded that by relying on a forum for clinical advice you made yourself sufficiently competent to deal with an adverse issue that arose during treatment. They are more likely to be of the opinion that, having identified a problem, then you should have offered the patient to a more experienced clinician for advice and further treatment.

Many of the orthodontic systems developed for GDPs offer training and advice about case selection for the clinician. It is worth spending time, however, researching whether support is also available, preferably from a specialist orthodontist, during the treatment process to reduce your risk of receiving a complaint from a patient about not achieving treatment goals within a reasonable timeframe. There is no doubt that case selection is the key to delivering successful GDP orthodontics which can be rewarding to deliver with good stable results, with happy patients who will be good adverts for your work.

Another problem that may arise during orthodontic treatment occurs if the clinician has to leave the practice under circumstances that were not foreseeable or if they are away on long-term sick leave. Other clinicians have been caught out because a treatment has taken much longer than they were anticipating and was not finished before a pre-planned departure or absence from the practice, for example maternity leave.

Patients have been left in situations where their dentist is not available to continue their treatment and there is nobody else within the practice trained to adjust their appliance. Treatment times are likely to be increased as arrangements are made for the patient to be seen elsewhere, which may lead to a complaint. There is also a risk that an unsupervised fixed appliance will lead to issues such as enamel decalcification and trauma to the soft tissues, which could make the clinician vulnerable to a claim of clinical negligence.

Before embarking on providing short-term orthodontic treatment, it is worth spending time identifying other practitioners in your area who use the same appliance systems. It may then be prudent for you to discuss together the arrangements that could be put in place for the ongoing care of your patients should you stop working at your current practice.

Retention

It is also important to consider the arrangements that need to be put in place for the long-term monitoring of orthodontic retainers.

As discussed previously, it is important to obtain the patient's consent for the type of retention that you are planning to use before treatment begins. Complaints have arisen when a patient has successfully completed their orthodontic treatment only to be advised that they now face a lifetime of retainer wear and additional costs for the monitoring of the retainers. It is therefore also important to include details of what is included in terms of follow-up after debond, and the cost of replacing retainers, within the initial contract with the patient.

Short-term orthodontic treatments with limited objectives tend to move the teeth into inherently unstable positions. It is therefore almost certain that you will plan to fit a fixed retainer at debond. It is extremely important that the patient is given clear instructions about the maintenance of the fixed retainer when it is fitted. Ideally, this should be backed-up with written instructions. The instructions about maintenance of the fixed retainer

that were given to the patient should be recorded in the clinical notes.

Failure to record details of these instructions in the clinical notes could leave you vulnerable to a claim of clinical negligence, if the patient fails to maintain oral hygiene around the appliance, resulting in caries or periodontal disease. Similarly, the patient should be advised that, if they become aware that the fixed appliance has debonded from any tooth, then they should seek clinical advice immediately. Not only will a partially debonded appliance fail to retain the tooth from which it has become detached, but there is also a risk that the wire will eventually debond completely.

A case was recently reported where a fixed retainer wire debonded completely and was swallowed by the patient.[17] Unfortunately, the wire then became embedded in the wall of the gut, leading to abdominal pain. The wire had to be surgically removed. It is therefore necessary to warn a patient for whom you are fitting a fixed retainer that not only is there a risk that their teeth will relapse if they do not seek advice for a broken fixed retainer, but also that they may be putting themselves at risk of swallowing the wire.

Similar to the issues that were discussed about frequent debonded brackets, if a patient returns with frequent breakages to their fixed retainer, it is important to consider why this may be happening rather to merely rebond the retainer and send the patient on their way. Again, a GDP may be vulnerable to a complaint from a patient about frequent breakages to a fixed retainer, because they do not have the knowledge or clinical experience to identify if a tooth is inherently unstable, for example. It is also important to appreciate that if a fixed retainer partially debonds, the remaining wire may start to place forces on the teeth that are still attached to the retainer. The patient could then make a complaint about their teeth moving.

Although there is no overall agreement about the best form of retention,[18] specialist orthodontists have become aware that a fixed retainer which only retains the position of a few teeth, is not sufficient on its own to retain a tooth that is prone to relapse, for example, a very rotated tooth. Many now fit removable 'Essix' type retainers for patients to wear at night over their fixed retainers to support the retention.[19] Orthodontic systems that have been developed for GDPs tend to recommend this form of retention as well.

Adult patients may be reluctant to wear an acrylic retainer at night for the foreseeable future. It is therefore important that this is commitment is discussed with them during the initial consent process. It is also important to explain the purpose of this additional retainer at the time that the retainers are fitted, and to document these discussions in the clinical notes at debond. Failure to do so may leave you vulnerable to a patient returning with relapse and claiming that they were under the impression that their removable retainer only needed to be worn if their fixed retainer had broken and they were unable to attend immediately for repair.

Conclusion

In conclusion, the ability to be able to offer short-term orthodontic treatment with limited objectives in-house to your adult patients is very attractive to a GDP. Many patients will be grateful that they will not have to travel to another practice or to build a relationship with another clinician to improve their dental appearance. There are also advantages in being able to co-ordinate the patient's orthodontic treatment with their regular dental care and also as part of a more extensive oral rehabilitation.

It is important to be aware, however, that as a GDP providing orthodontic treatment, you will be vulnerable to an accusation that you did not have sufficient knowledge, skills and experience to undertake this treatment, if a patient makes a complaint. This article has discussed the steps that you can put in place to reduce your risk of receiving such a complaint.

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