

# Clear aligner treatment for dentists: challenges and opportunities

This article provides general dental practitioners with an overview of some of the clinical and planning challenges that frequently arise in the provision of clear aligner treatment.

## Introduction

Clear aligner treatment (CAT) continues to grow in popularity, among both patients and treating clinicians. The reasons for this are numerous. For patients, clear aligners are generally accepted, and indeed marketed, as being a more aesthetically pleasing option for straightening the teeth than traditional orthodontic treatment, including fixed appliances.<sup>1,2</sup> This makes them particularly appealing for adults, who more often have jobs or lifestyles that demand a more discreet and somewhat flexible treatment modality, permitting their removal for special occasions, along with eating or drinking. They are also regarded as being more comfortable and less painful, compared to their fixed counterparts, including less soft tissue irritation.<sup>1</sup>

From a clinician's perspective, CAT can be an attractive option. It is generally a more clinically time-efficient choice, with fewer follow-up appointments, fewer emergency appointments, and less chairside adjustment than fixed appliances.<sup>3</sup> Aside from general ease, the time saved here also means that this form of treatment is economically favourable for the prescribing clinician. However, clear aligner treatment is not without its issues.

## The problem

There appears to be no need for formal accreditation when it comes to general dentists providing CAT, meaning that the barrier for offering the treatment is very low indeed.<sup>4</sup>

General dentists are often led to trust in the 'simplicity' of treatment planning. Teeth are moved in 3D computer-aided design, computer-aided manufacture (CAD-CAM) software, with scant regard as to whether the planned movements are biologically safe or even achievable. General dentists then take these generated simulation plans and use their own, usually limited, orthodontic knowledge to 'tweak' them. Unfortunately, there is then a high tendency for such plans to require multiple refinements at best, or intervention from a specialist at the more serious end, to achieve a somewhat acceptable result.<sup>5</sup>

Dentists' assumptions about who is planning their CAT were made clear in a recent National Aligner Survey, conducted in 2024.<sup>6</sup> Over half of surveyed dentists (52%) working with traditional aligner brands assumed that an orthodontist was planning their treatments. A further 27% expected a dentist to be planning their treatments, 17% expected a non-dentist with clinical training to be planning their treatments, and only 4% expected it to be a non-dentist, trained in 3D CAD-CAM software. Unfortunately,

it would appear that it is almost always the latter who are planning on behalf of dentists, with consequent questionable and unpredictable outcomes, and the risk of patient dissatisfaction and complaint, given that they are such high-value treatments.

## A new way of planning

It would be recommended to get a specialist orthodontist involved from the outset in the case assessment, in determining suitability for CAT and, where appropriate, in the planning and treatment process. The added value of working alongside a specialist orthodontist on clear aligner cases is threefold:

### 1. Better case selection

General dentists may be in a position to provide CAT, not only due to their already longstanding, trusted relationship with their patients, but also because they form part of the orthodontic journey – in terms of stabilisation of the dentition, retention, and post-orthodontic cosmetic treatment. However, the challenge facing general dentists lies in selecting the appropriate clear aligner cases, and more importantly identifying whether a case is suitable or unsuitable for them to treat.<sup>5</sup> The appropriate support and mentorship of a specialist orthodontist could help general dentists to manage CAT more successfully. This can be illustrated in **Figures 1A and 1B**, which represent the start and end of treatment. The patient, through prior orthodontic consultations, had been informed that his malocclusion was too complicated for orthodontic treatment alone and required a combination of fixed orthodontic treatment with integrated orthognathic surgery, despite his own request to limit the treatment goals to improvement of anterior alignment. In light of this, the patient's own dentist was able to understand, with the help of an orthodontist, what movements were safe and



FIGURE 1: (A) Pre-treatment intra-oral photograph showing severe Class III incisor relationship, with anterior and lateral open bites and bilateral posterior crossbites; (B) post-treatment result with clear aligner treatment.

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FIGURE 2: Intra-oral occlusal photographs showing mild upper and lower anterior crowding, with rotation of UL1.

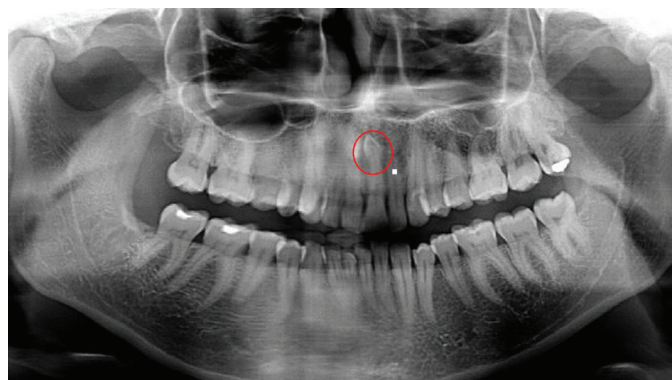


FIGURE 3: Dental panoramic radiograph of the patient, demonstrating the presence of an unerupted early-forming (conical) supernumerary tooth associated with the root of the UL1.

predictable, what results could be expected, and the occlusal traits that would need to be accepted, thus obtaining valid consent. As such, the case illustrates the significant benefits to be achieved when a dentist collaborates with a specialist to work mutually towards delivering treatment for limited but optimal goals (Figure 1B). Without such help and support from an orthodontist, it is understandable that the dentist might have seen the case as untreatable.

Case selection also extends to the assessment of all aspects of the presenting malocclusion, and in this regard mentorship from an orthodontist can equally be invaluable in helping to identify 'hidden' challenges. This can be illustrated in the second case (Figure 2), where a patient approached her dentist with a desire to improve her anterior alignment, with an impending wedding in six months. Her dentist sought the advice of an orthodontic specialist as to the feasibility of the treatment within this time frame. On clinical inspection, this appeared to be a relatively achievable goal, but in evaluating the radiograph (Figure 3), the orthodontist working alongside the dentist noticed the presence of an unerupted supernumerary tooth in the maxillary incisor root area. Any attempt to align these teeth without first removing the supernumerary tooth could have resulted in either no movement or root resorption of the incisor.

### 2. Treatment planning

The second perceived advantage of working alongside an orthodontist is more consistent, predictable treatment plans, ultimately leading to better patient outcomes and a reduction in the need for extensive refinements.

We need to accept that 3D CAD-CAM treatment planning software can design very unrealistic tooth movements, and while plans made by traditional aligner



FIGURE 4: (A) Pre-treatment intra-oral photograph showing large maxillary diastema; (B) post-treatment intra-oral photograph showing optimal closure of the median diastema.

brands might look 'good', whether these simulations translate into safe, predictable movement is a completely different – but more important – question. It is sometimes easy to forget that while a technician undertakes the tooth movements, the dentist, as the prescribing clinician, must take full responsibility and therefore liability for the proposed CAT plan, and any negative repercussions that may come of it. Such a predicament is simply not worth the risk for many general dentists, especially when it comes to treating cases at the more complex end of the spectrum. A recent survey revealed that 20% of experienced aligner dentists understandably 'play it safe' when it comes to their treatments, opting to only take on what they perceive as mild to moderate cases.<sup>6</sup> In contrast, a dentist working alongside an orthodontist, who can both assess and plan the required tooth movements, ensures peace of mind in the treatment plan created, the comparative predictability of the programmed movements and, overall, a better margin of safety.

**Figure 4** highlights these benefits, where resolution of the maxillary midline diastema was the patient's main goal in undergoing treatment (**Figure 4A**). Although simply moving the teeth together on 3D CAD-CAM software might appear to resolve the issue quite easily, the actual movement in the mouth is relatively complex. Without proper planning, including the careful design of attachments, these teeth would most likely tip towards each other, with limited root control, resulting in a rather unsightly black triangle, a loss of overjet, a certain irresolution of the patient's main complaint, and a high relapse potential. However, with careful, orthodontist-led planning, including the intricate planning of vertical attachments on the central incisors, the result was much more predictably achieved (**Figure 4B**).

### 3. Gaining valid consent

Working alongside an orthodontist in planning the CAT allows the dentist to better understand the limitations and risks associated with treatment. In turn, this allows the dentist to obtain valid and informed consent from the patient before the commencement of treatment. As stated earlier, it is vitally important that the dentist understands that they, as the prescribing clinician, must take full legal responsibility and therefore liability for the proposed CAT plan, irrespective of what aligner manufacturer software-simulated tooth movement is generated for them. In this regard, input from an orthodontist can specifically help the dentist in this key process, with comprehensive case assessment, formulating patient-specific 'call-outs' and points of discussion, and a supportive tooth animation movement table, to help the patient understand exactly what is being planned and, more importantly, which traits of their malocclusion are not, if appropriate, being addressed. Again, the patient in **Figure 1** is an excellent example of this principle. The value of this is both a dentist and a patient who are better informed of the potential risks of treatment, how they can be mitigated, and whether they ultimately want to go ahead with the treatment.

### Connecting with specialists

In the current CAT market, companies are emerging that are not limited to aligner manufacture and provision, but are specially designed to connect general dentists with highly experienced orthodontic specialists, from across the world, in order to provide more predictable CAT plans and patient outcomes.

This emerging model looks to specifically incorporate the dentist's perspective of their patient's goals and what a 'good' outcome looks like for them, as well as the usual pre-treatment records. An experienced orthodontist can then utilise

this information to work alongside an orthodontic technical team, who are highly trained and experienced in CAT, to help facilitate the most effective, predictable, and safe tooth movement.

Such companies permit the dentist to enjoy direct communication with their assigned orthodontist throughout the entire planning process, allowing the dentist to ask questions, and the orthodontist to mentor them through unfamiliar or complex aspects of the case. The importance of this level of specialist support cannot be over-emphasised when it comes to the challenges of case assessment, suitability, consent, and the provision of CAT. In turn, with dentists being solely held responsible and accountable for the provision of this treatment, it is perhaps no surprise that a leading UK defence organisation has publicly endorsed such an approach, not least for the fact that they feel valid consent is being gained.<sup>7</sup> These newer approaches to the provision of clear aligners also tend to hold other benefits for general dentists providing orthodontic treatment. While specific aligner providers opt for a one-size-fits-all approach to aligner packages – one material, one trimline, one attachment template – other systems offer the dentist more flexibility and choice, specific to the needs of each patient. For example, these newer systems offer a range of materials, and a choice of trimlines and attachment templates.

These new systems are also supporting research developments in CAT, working alongside world-leading research institutes on projects, including one that is designed to understand the training and preferences of dentists undertaking CAT, and another evaluating clear aligner material properties in clinical use.<sup>8</sup>

### Summary

Clear aligners are revolutionising orthodontics, offering patients a more aesthetically pleasing, convenient, and comfortable alternative to traditional braces. However, behind the rapid rise in popularity lies a critical issue: poor treatment planning. Thus, by having the support and mentorship of an orthodontist, dentists wishing to undertake clear aligner treatments can produce safer treatment plans with more predictable outcomes. This collaborative approach supports better case selection, with the potential to reduce refinements, and empowers dentists with mentorship, clear consent protocols, and stronger patient outcomes.

### Conflict of interest

Prof. Ama Johal acts as a clinical lead for 32Co in providing mentorship and educational resources.

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- Research being undertaken by the author at Queen Mary University of London.