From straightforward to complex cases

The new NimrodAligner and why it can be the ultimate orthodontic removable aligning system

Authors: Nimrod Tal & Lauren Flannery, UK

Figs. 1–5: Designed to move from 5–5 in all directions, and also widen the molars, the NimrodAligner comprises of lingual and labial arch wires attached to individual cups that seat on each tooth with the aid of a composite anchor, and a connecting bar to seat on the palate or the lingual area, that are attached to molar cups.

As a dental practitioner, helping your patient look to improve their smile by undergoing orthodontic treatment with one of the many aligning systems available can be a very daunting decision to make when it comes to choosing the right system. Whatever their lifestyle, the attributes most commonly sought after are typically comfort, discreteness and for the treatment time to be as speedy as possible. Depending on the case, it can sometimes be quite difficult to achieve all of these aims within one single aligning system, as each are designed to achieve very specific and individual movements, and not all are designed to do this with the whole arch.

As an orthodontic laboratory, we are introduced to hundreds of very individual cases on a weekly basis, where more often than not patients will have specified that the above attributes are key to their decision making process when we assess for the appliances that will be best suited to their particular case. After having been faced so regularly with the task of assisting our clients to make the decision that will benefit their patients in as many aspects as they can, we had a thought—what if the advantages of each of these aligning systems were combined, and the disadvantages eliminated? It was from this that the idea of our brand new NimrodAligner stemmed.

Designed to move from 5–5 in all directions, and also widen the molars (Fig. 1), the NimrodAligner comprises of lingual and labial arch wires attached to individual cups that seat on each tooth with the aid of a composite anchor, and a connecting bar to seat on the palate or the lingual area, that are attached to molar cups. After having spent four years researching the most effective
components and combining them using prototypes with 3-D printers, we have combined the biomechanics of straight wire, Clear Aligners and a spring aligner to reduce the downsides of having treatment considerably and focus more on the positive features.

Typically most common with adolescents, fixed brackets appear to be decreasing in popularity, mostly due to the fact that they are not particularly aesthetically pleasing and can therefore encourage a feeling of embarrassment for adults when in public. Combined with hours of clinical time spent fitting and repositioning the individual brackets, hygienic problems owing to not being able to brush or floss properly, as well as the discomfort of their often sharp exterior both labially and lingually, it is no surprise that they are not as often requested as more popular removable aligners. The NimrodAligner has the fixed brackets arch wires biomechanics incorporated within the removable appliance so clinical time is extremely minimal. The teeth and gums can also be cleaned to the proper standard and at only 2 mm in thickness (Fig. 5)—as opposed to the standard 3 to 3.5 mm thickness of fixed brackets—so the overall feel is very anatomically friendly.

Clear Aligners are the most anatomically friendly appliances on the market today, and are mostly popular because of just how discreet they are. Despite these advantages, the force and pressure induced during the initial days of wear can be very painful. Although a sign that they are working as they should, the aligners tend to become passive as time passes and are typically only at their most active in just the first seven days. On the other hand with the NimrodAligner, NiTi wires ensure that the pressure is gentle, yet provide continuous support.

Multiple Clear Aligner trays can also become very tedious for both patient and dentist, particularly when frequent appointments are necessary and stages of interproximal reduction (IPR) have to be carried out. IPR can be a huge factor in the progress of Clear Aligners as each aligner is made to incorporate the necessary IPR after each stage and the fit of following trays will be affected if not enough has been done. This is not a problem for the NimrodAligner as it will not affect the fit of the appliance if there has been insufficient IPR on the previous appointment. The patient can continue to wear it and IPR can be completed where necessary on the next appointment.

Similarly, spring aligners can also continue to be worn and fit correctly in between appointments if not enough IPR has been done previously, however they’re widely known for limited movement to just four incisors. It may be good for labial/lingual movement using the ‘squeeze’ effect, and some rotation, but Clear Aligners can often be required to finish.

In some instances, a separate expansion appliance may be required prior to treatment, which essentially boosts costs and adds time onto treatment overall. We have reduced this concern by offering this stage for such cases within the NimrodAligner singularly.
The arch can gain molar width by pre-setting the molars in a wider position when it comes to making the movements on our 3-D system, and the connecting bar can act as a spring thanks to its flexibility.

The rest of the teeth will continue to be aligned during this process.

In more complex cases however whereby a separate expansion appliance is unavoidable, two NimrodAligners will be provided. The caps will not fit on the teeth that are blocked in otherwise, so the initial appliance will create space for the blocked teeth. Once they have been exposed, the second appliance would be provided to sit on all of the teeth.

During our research and production stages, we aimed to create the ultimate orthodontic removable aligning system that could potentially be the answer to the prayers of dentists and patients alike. We have reduced clinical time dramatically by removing the time-consuming hassle of fitting appliances such as fixed brackets by providing a bespoke pre-aligned appliance that simply needs to be placed on the teeth. We have taken into consideration the fact that multiple appliances can sometimes be necessary to achieve the desired result, and have eliminated the need for this by designing the NimrodAligner in a way that allows the entire arch to move in any direction. In case expansion is also required, we have this incorporated (Fig. 1).

We have adapted the force and pressure of the movement to be effective for just sixteen hours a day, allowing the patients to remove the appliance for an entire eight hour working day if they wish, to grant the roots a sufficient amount of time to recover.

By combining all of the positive aspects of the orthodontic appliances mentioned above, the NimrodAligner can be suitable for most cases from straightforward to complex.

**contact**

Nimrod Tal is the director of NimroDENTAL Orthodontic Solutions in London. He can be contacted at contact@nimrodental.co.uk.