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**Praxis**  
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*excellence in orthodontic management*

## Combining other modalities with Invisalign® can give you:

- 1) confidence to start more cases,
- 2) more control over the final result,
- 3) greater expression of your expertise,
- 4) more value-added treatment.

# Combination Treatment to Meet Market Demands

PRE-INVISALIGN®  
COMBINATION  
TREATMENT,  
PART 1:  
INTRUSION

BY WAYNE B. HICKORY, DMD, MDS

1.

The Invisalign® System is a powerful tooth alignment method. Like every appliance it has its strengths and weaknesses. As specialists, our role is case selection and the merging of this modality with other techniques to the patient's best advantage.

### Invisalign® Strengths

First, let's recognize some of the strengths of the Invisalign® System. A diagnostic set up is done for each case, digitally. This reduces guesswork as to tooth size discrepancies, the need for interproximal reduction or post-orthodontic bonding. Also, there is an opportunity to do trial treatments. For example, a lower incisor extraction treatment can be compared to interproximal reduction and/or expansion.

There is a paradox that although

Invisalign® works by very small increments, the total treatment time is often surprisingly short. Since the treatment is done on a computer model, each small increment of tooth movement is entirely targeted toward the final predetermined goal. This explains why, with Invisalign®, many cases seem to finish faster than cases with traditional brackets, even though the tooth movement per week is less (Figure 1).

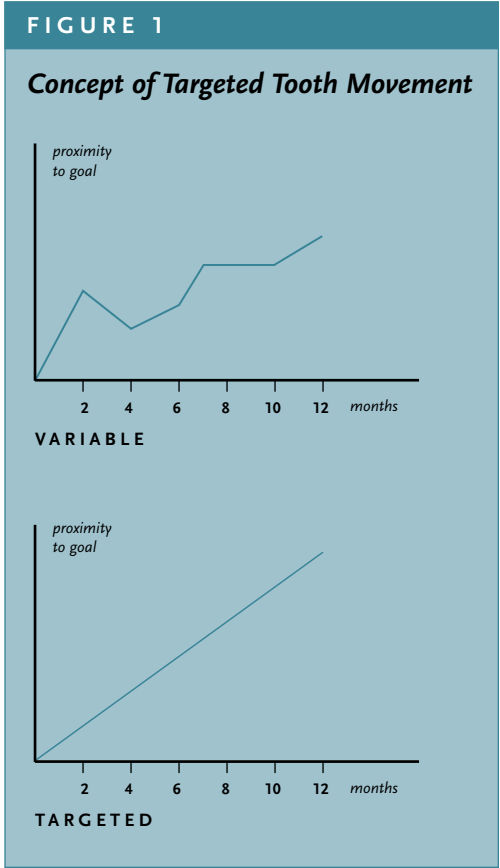


FIGURE 2



There is a paradox that although Invisalign® works by very small increments, the total treatment time is often surprisingly short.

With braces, tooth movement can be faster per unit of time, but not all movement is 100% targeted. There can be round tripping, appointments may be missed, bracket placement may need correction, brackets may fail, and a wire ideal for one area of the arch may be inappropriate for another area. With the Invisalign® aligners, the anchor and reactive teeth can be selected for each aligner. Of course, this depends on proper treatment planning of this system.

#### Invisalign® Limitations

One current limitation of the Invisalign® System is the lack of inter-arch mechanics. However, interarch Class II elastics can be applied to the aligners if buttons are bonded or punched with heated pliers onto the aligners. Without such additions, occlusal corrections are limited to about 2mm of upper molar distalization.

Rotation of round teeth like premolars is difficult, since the aligner tends to slide around the round tooth. Bonded attachments on the teeth can help, but this type of tooth movement can be guaranteed only to a certain extent. Similarly, vertical changes can be challenging. Extrusion of a tooth may be like trying to grasp a watermelon seed. It will slip out of the aligner. Intrusion

may be difficult since the anchor teeth experiencing extrusion will have similar potential for slippage. These problems can be addressed to some degree with attachments. With the use of attachments, of various shapes and sizes, rotations, intrusion and extrusion will be achieved with greater predictability.

#### Combination Treatment: Before or After

If one anticipates a need to supplement the Invisalign® System with fixed appliances, it would seem beneficial to do this prior to Invisalign® rather than after. Since the aligners are very effective for finishing, it would usually be inefficient to follow Invisalign® with other treatments. It would usually be difficult to retain alignment detail while following up with a post-orthodontic treatment: like an intrusion arch. Also, some adjunctive procedures, such as distalization and expansion, create space that is needed to allow the aligners to work.

#### Goals of Pre-Invisalign® Treatment

The goal of pre-Invisalign® treatment is to make a case acceptable for Invisalign® treatment which otherwise would not meet the selection criteria or to ensure that a case has a more ideal result. In doing this, we need to design pre-Invisalign® appliances that will be acceptable to someone seeking an invisible type of treatment. This needs to be something that has low show and/or is removable. The pre-Invisalign® treatment goals are typically: intrusion of incisors, molar distalization, Class II correction, expansion and canine retraction in premolar extraction cases. In part one of this series, pre-Invisalign® intrusion will be illustrated.

#### Part One: Pre-Invisalign® Intrusion

FIGURE 3



FIGURE 4a



FIGURE 4b



## If one anticipates a need to supplement the Invisalign® System... it would seem beneficial to do this prior to Invisalign®...

Patients are often very surprised that we can intrude incisors. This has special patient appeal when there is excess show of maxillary incisors below the upper lip line. The Invisalign® System is a very powerful tool for aligning teeth. Intrusion or extrusion with the help of attachments can be achieved, but not as predictably as with fixed appliances. This is especially true if considerable

intrusion is needed. Intrusion arches are one of the most predictable tooth movement systems in our fixed appliance armamentarium (Figure 2).

By using plastic or porcelain buttons at the gingival third of the incisors, the show of the attachment of the intrusion arch can be minimized (Figure 3). Intrusion of one or more teeth can be achieved by these techniques prior to Invisalign® (Figures 4 and 5).

If a large segment of teeth needs to be intruded, a lingual bonded retainer can be used to splint them. One or more buttons bonded on the labial aspect of the teeth can then apply an intrusive force.

Alternatively, an intrusive force can be applied to the labial of each of the teeth needing intrusion.

In summary, every orthodontic appliance has its strengths and weaknesses. This series of articles will show simple, esthetic and/or removable pre-Invisalign® appliances to compliment Invisalign® treatment. In this first part, we have shown an esthetic way to accomplish large amounts of intrusion prior to Invisalign® for a better, more predictable result. ■

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*Dr. Hickory is the Editor in Chief of Praxis. He is a graduate of Trinity College (B.S.) Connecticut. He received his DMD, orthodontic certificate and MDS from the University of Connecticut School of Dental Medicine. Dr. Hickory was a full-time faculty member of Orthodontics at the Vrije University in Holland and the University of Maryland. He has over twenty years of experience in orthodontic private practice and continues to consult and teach internationally.*

FIGURE 5

