Techniques for Class II Correction with Invisalign and Elastics

By Dr. Sam Daher, DDS, M.Sc., FRCD(C)A

I recently conducted a study looking at treatment results of consecutively-treated Class II patients treated with Invisalign and Class II elastics. As part of the study, I documented the treatment protocol used to achieve successful, consistent results in 14 consecutive Class II patients.

**Tip 1: Case and Patient Selection for Sequential Distalization**

Dental Class II malocclusion that is 4 mm or less can be treated with Invisalign via sequential distalization. Sequential distalization is defined as the distal movement of upper posterior teeth one tooth at a time. When the second molar or the last posterior tooth is distalized mid-way, distalization for the next tooth is initiated, as per Align’s software default (see Ref. 1). This treatment is further reinforced by Class II elastics.

**Ref. 1:** Sequential distalization is defined as posterior teeth that are distalized one tooth at a time. When the second molar or the last posterior tooth is distalized mid-way, distalization of the next tooth is initiated. This treatment is further reinforced by Class II elastics.

Distalization is suitable for adults or teens. However, with teens, the clinician can rely on growth to aid in the Class II correction. Therefore, it is not always necessary to program ‘sequential’ distalization in growing teens. Alternatively, I often prescribe an Elastics Simulation (AKA “bite jump”); the bite jump in the ClinCheck® treatment plan simulates the effects of Class II elastics in these growing patients.

**Tip 2: Extraction of the Upper Third Molars Increases the Efficiency of Distalization**

If a patient presents with upper 8s intact, you may scan or take impressions prior to any extractions. You may request your technician to “virtually extract the upper 8s.” While waiting for delivery of the first aligners, the patient’s upper 8s can be extracted. Advantages for this process are two-fold, 1) The patient is not swollen due to the extraction, so taking impressions is simpler; 2) Distalization with the first aligner can begin immediately while the extraction site is healing. This allows you to take advantage of the healing process for more favorable distalization.

In my practice, the first aligner is dispensed 10-14 days following the extraction of the upper 8s. Distalization can start from stage 1.

**Tip 3: Accuracy of Impression and Bite Setup is Critically Important to the Success of Distalization Treatment**

It is important for the aligner to cover the distal aspect of the 7s. Therefore, extra attention should be paid to the detail that is captured in the impression or the 3D scan. If using PVS impressions, use extra putty to lock the light body impression material in the distal portion of a well-fitting impression tray. If the 8s are still present, it is not necessary to capture the entire tooth. Capturing the 8s halfway will be sufficient, as the ClinCheck® software will rebuild the distal aspect of the 7s and virtually extract the 8s. This will help with better detail and avoid running the material down the patient’s soft palate.
In addition, a correct bite setup in ClinCheck is important for the success of distalization. To help the technician set up the bite correctly, I take the occlusal photos after having the patient bite into articulating paper in centric relation (see Ref 2).

Ref 2: To help the technician set up the bite accurately, use articulating paper before occlusal photos to show where the occlusal contacts are.

Tip 4: Always Supplement Distalization with Class II Elastics

Elastics are essential in facilitating movement of teeth and correction of bite.

For Class II Div. 1 cases, you can use precision cuts on the upper 3s to attach elastics. Always bond a button on lower 6s as close to the mesio-buccal aspect as possible. For Class II Div. 2 patients, bond buttons directly on the upper canines. Attaching elastics directly onto the aligner tends to dislodge the aligner for Class II Div. 2 patients.

Class II elastics can start once the patient has had some experience with full time aligner wear. In my practice, attachments and IPR are done at the second appointment, and Class II elastics starts at the third appointment. This is done intentionally to gradually introduce the patient to the full Invisalign armamentarium.

In my practice, the third appointment is roughly when the patient starts aligner #8. This is approximately when the first distal tooth is distalized midway and it’s time to distalize the second tooth. Starting Class II elastics at this time increases the anchorage and minimizes the chances of advancing the anterior segment. Once the canines are in a Class I position, Class II elastic wear can be stopped (see Ref. 3).

Ref. 3: Elastics are used to reinforce anchorage and prevent flaring of anterior teeth in addition to protracting the lower alveolar arch.

Elastics should be worn 21 hours/day, the same as aligners. Elastic force used for Class II elastics is typically 3.5-4.5 oz, size 3/16”. If the upper and lower midlines are coincident, elastics should be worn bilaterally. However, if the upper and lower midlines are off, unilateral Class II elastics should be worn on the Class II side to help center dental midlines (assuming the upper midline is off from facial midline). I reinforce the importance of wearing elastics to the patients as it is an essential component of the Class II treatment protocol.

Tips for ClinCheck Setup

Request rotation of the upper first molars

Upper molars that are rotated mesial-in can be corrected during distalization. This will help with Class II correction and decrease the amount of molar distalization required. Vertical attachments can be placed on the mesio-buccal cusp of the rotated molar to help with rotation and distalization. If more than a few degrees
of mesial-out rotation is needed on the upper first molars, vertical attachments can be placed on the first molars instead of the second molars.

**Request expansion of the upper posterior teeth as appropriate**

Some expansion of the maxillary arch may be necessary to achieve arch coordination with the lower arch. The expansion, rotation of molars, and distalization can occur concurrently as a three dimensional movement.

**Request labial crown torque / lingual root torque on the upper incisors**

It is possible that the upper incisors tip lingually during the distalization/retraction of the anterior segment. It is recommended to request labial crown torque/lingual root torque during the retraction of the anteriors to minimize their tip back clinically.

**Place attachments on every other posterior tooth to help control root movement**

Placing vertical rectangular attachments on the mesio-buccal of upper molars helps to control root movement during distalization. Vertical attachments also help with molar rotation. In general, I place vertical attachments on upper 7s, 5s and 3s. In cases where the upper 6s are rotating mesial-out, then the attachments go on the 6s rather than the 7s.

With the new optimized attachment protocol, you may want to substitute the optimized attachments on upper 3s with vertical rectangular attachments to accommodate the precision cuts. It is also imperative not to overdo the number of attachments. Prescribing more than 3 buccal attachments per quadrant will cause difficulty in removal of the aligners and increase patient discomfort. Patient discomfort in turn affects patient compliance. Optimizing ease of aligner wear for the patient will go far in achieving full patient compliance.

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**TIPS FOR PATIENT MANAGEMENT**

**Set correct patient expectations**

Inform patient that spaces will be intentionally created and that anterior teeth will be corrected during the latter phase of the treatment.

**Patient compliance**

Patient compliance is crucial for the success of the treatment. If the aligners are out for more than 6 hours a day, much of the progress is lost. Simply returning to the previous aligners to recapture the lagging teeth is not possible as relapse is not a linear movement. It is necessary to make patients aware of the importance of their compliance.

**Use Aligner chewies**

Chewies assist in seating the aligners better and in turn optimize tooth movement. Patients should bite into the chewies for 8-10 second intervals for 5 minutes in the posterior region. This should be done both in the morning and evening.

**Lower aligners**

It is necessary to explain the importance of wearing lower aligners throughout treatment to the patient. Make certain passive aligners are staged in the ClinCheck treatment plan to accommodate the entire upper treatment.
**DR. SAM DAHER**

A bilingual native of Montreal, Dr. Sam Daher received his DDS from McGill University with distinction in 1994 then practiced general dentistry for a few years before returning to Université de Montréal to complete a Masters’ degree and specialty in orthodontics, where he also taught undergraduate orthodontics.

Currently practicing in Vancouver and Calgary, Dr. Daher maintains an Invisalign practice in the downtown Vancouver where he treated over 2,400 Invisalign cases of varying complexity. Dr. Daher is British Columbia’s first Elite Premier provider.

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Disclosure: Dr. Sam Daher was provided an honorarium from Align for his article. The statements, views and opinions expressed in this article are those of the author, and do not necessarily reflect the views and opinions of Align Technology, Inc.