Tips from your peers to help you treat with confidence.

**Class II Correction with Invisalign®**

Including Class II Correction Simulation in the ClinCheck® Treatment Plan.

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There are many different methods of correcting Class II malocclusions in orthodontics. The first step in deciding which method is appropriate for any given patient is records and diagnosis of the malocclusion. Invisalign is my appliance of choice in Class II cases where the sagittal discrepancy is up to approximately 3.5 mm (pic 1) and the decision is to correct the discrepancy completely by a combination of distal movement of the maxillary arch and/or mesial movement of the mandibular arch supported by Class II elastics. Invisalign offers the advantage of improved posterior vertical control and avoidance of undesired mandibular posterior extrusion which could lead to down and back rotation of the mandible increasing the Class II discrepancy. Here are my techniques for Class II correction with Invisalign using the Class II Elastic Simulation (also known as bite jump) in the ClinCheck treatment plan to simulate sagittal correction.

Pic 1: Class II buccal segments requiring approximately 3.5 mm correction.
Tip 1: Align and Level Upper and Lower Arches.

The treatment goal includes alignment and levelling of the upper and lower arches. Depending on the severity of rotations, crowding or spacing, curve of Spee, anterior torque and other individual characteristics of the malocclusion, many different features will appear in the ClinCheck treatment plan, including Optimized Attachments. Each arch will be aligned individually in the ClinCheck treatment plan during this initial alignment phase. In this technique of ClinCheck set-up there is no need for significant distalization of the upper posterior teeth or mesialization of lower posterior teeth during the alignment phase of the ClinCheck treatment plan. There is an advantage to activating the periodontal ligaments of the upper molars by mesial-buccal rotation of the upper first molars and minimal movement of the upper second molars to allow the upper molars to rotate in distal direction about the large palatal root of the upper molars (pics 2 & 3). The activation of these periodontal ligaments will aid in the clinical distal movement of the upper molars from the distally directed forces to the upper aligners from the Class II elastics. The Class II relationships will remain present in the ClinCheck treatment plan during this phase although improved by molar rotations (pic 4 & 5).

Pic 2 and 3: Alignment and Coordination of upper and lower arches including mesial-buccal rotation of correction of upper molars.

Pic 4 and 5: Before alignment and after alignment, still before Class II Correction Simulation.
Tip 2: Add Precision Cuts - Class II Elastic Features in the ClinCheck Plan.

Since Class II elastics will be required during the alignment phase of the orthodontic treatment, my preference is to place Class II elastic hooks on the aligners on the upper cuspids, and cut-outs for buttons on the mandibular second molars (Precision Cuts) (pic 6). Aligners provide excellent posterior control against extrusion of posterior teeth, and the advantage of having Class II elastics from upper cuspids to lower second molars allows for increased horizontal vector of the elastic force without the disadvantage of extrusion of lower second molars. This vertical control offered by Invisalign often leads to shorter treatment times with elastic wear. In anticipation of the dislodging effect of the elastics on the aligner in the upper anterior area, some attachment should be present (on first bicupids, cuspids or lateral incisors) to aid in maintaining retention of the aligner on the teeth in the upper cuspid area. By default, the Molar Precision Cut protocol will place a retention attachment on the tooth mesial to the hook unless there is already an attachment placed there to address another movement, i.e. bicuspid rotation.

Pic 6: Class II elastics to aligner hooks on cuspids and buttons on molars.
Tip 3: Add the Class II Elastic Simulation to the ClinCheck Treatment Plan and Assess Effectiveness of Class II Correction Clinically.

At the end of alignment of the arches, a ‘Class II correction elastic simulation’ on the Invisalign Prescription form is programmed to show the repositioning in ideal Class I posterior relations (pic 7 & 8). This sagittal bite jump represents the Class II clinical effects of Class II elastic wear. As in any orthodontic correction by elastic wear, the correction occurs over the treatment time. The patient will be using elastics throughout the treatment, and as alignment is progressing in earlier aligners, the doctor checks molar relationships to ensure the molars are translating to a Class I relation. The sagittal correction of molar relations will often take place well before the completion of all aligners, and the patient can then be instructed to wear less elastics. As in all orthodontic treatment, this progress is monitored during treatment by the orthodontist and instructions for either more or less elastic wear is decided by the orthodontist throughout the entire treatment time. Note that the number of aligners is driven by the tooth movements programmed, not by the expected time the elastics might need to do the A-P correction.
Tip 4: Detail the Occlusion and Refinement.

The nature of orthodontics has always depended upon patient cooperation and the orthodontist’s ability to assess progress and then adapt orthodontic forces to the dentition to detail the finish for the individual patient. The refinement stage of Invisalign treatment is an opportunity for the orthodontist to do just that. Depending on patient cooperation with and clinical response to Class II elastics and aligner wear, the patient may have an occlusal relationship that exactly matches the ClinCheck treatment plan, or on the other hand it would be expected that there may be some small differences as in any other orthodontic plan. At this time, the clinician can order refinement to detail the occlusion.

Conclusion.

I use this methodology in multiple patients with Class II malocclusions where the main correction of the sagittal discrepancy is Class II elastics. Using these four tips to set-up the ClinCheck treatment plan, you can take advantage of improved posterior vertical control while minimizing the risk of posterior extrusion. Patients can enjoy an improvement of their bite and smile all the while enjoying the benefits of Invisalign.