Deep bite treatment in growing patients.

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We all know that not all deep anterior overbite cases are alike. Before we can decide the mechanics and treatment plan that we would like to employ, we must consider factors including the patient’s age, skeletal type, smile line and degree of crowding. For example, if a patient has a dental deep bite, but still displays excessive gingiva upon smiling, the treatment goal would be to intrude the upper anterior teeth more than the lower anterior teeth when leveling the arch. If a patient is also dental Class II, consideration needs to be given to the effect that Class II elastics will have on the anterior teeth. We will address these typical issues later in this paper.

This paper compares and contrasts the treatment approaches for two young, growing patients who both have deep bites, but have different skeletal and esthetic concerns. This paper also shares tips for setting up ClinCheck treatment plans, particularly highlighting the application of InvisalignG5 clinical innovations for deep bite.
Case presentation: patient GB.

The first patient we will study is GB, a 13.5 year old male who presented with a moderate Class II malocclusion, accompanied by a deep overbite and excessive maxillary gingival display.

Treatment goals and approach.

- To alleviate the maxillary gingival display and address the deep bite, level arches by intruding the upper anterior teeth more than the lower anterior teeth.
- To finish with ideal anterior guidance, achieve adequate torque in upper incisors.
- To discocclude the posterior teeth, and aid in maxillary incisor intrusion by exerting more intrusive force on upper central incisors than lower incisors, use Precision bite ramps on upper central incisors.
- Procline first, then intrude, then retract as needed to push along the long axis of the tooth. By pushing directly along the long axis of the tooth, all force from the aligner is directed in a purely intrusive vector, making the intrusion much more efficient.

Clinical findings.

- Class II, Division 1.
- Mild crowding.
- Deep bite with maxillary gingival display.
- Good growth potential.
Setting up the ClinCheck treatment plan to achieve the treatment goals.

1. Indicate both upper and lower intrusion.

To improve the deep bite, in the prescription form on question 7, I indicate both upper and lower intrusion.

2. Add precision bite ramps to leverage bite forces.

For this case, I also ask for the new precision bite ramps to be placed on the central incisors.
By using the Precision bite ramps on the upper incisors, I am making sure that I get the needed differential intrusion. The pressure areas do make intrusion more efficient. However in this case, due to the gingival display, I want to make sure that the upper central incisors are intruded preferentially over the lower incisors. The Precision bite ramps exert more pressure directly on this area of concern by using the forces of the patient’s occlusal forces in addition to the forces of the aligner by itself.

3. To achieve ideal torque at the end of treatment, over-treat torque.

When the patient presents with lingually tipped incisors, it is my experience that the final torque is typically 10 degrees less than the ClinCheck treatment plan predicts. This is analogous to the torque in fixed appliances not ever being fully expressed by the bracket. I therefore instruct the technician to “labially crown-torque the upper 1|1 10 degrees beyond ideal” in the “Special Instructions” section of the treatment form. This will ensure that I will have adequate torque in the upper incisors to prevent excessive anterior guidance and a possible posterior open bite.

4. To correct the overjet and address the A-P discrepancy, apply Class II elastics.

Class II elastics will tend to tip the upper incisors lingually, as well as to extrude them. Fortunately, this side-effect is much less severe than seen with fixed appliances, due to the occlusal coverage of the aligners, along with more secure fit of the aligners against the labial and lingual surfaces of the teeth. By asking for increased labial crown torque and a minimal overbite in the ClinCheck treatment plan, I will end up with ideal torque and overbite at the end of treatment.

Figure 4. Note the minimal overbite in the ClinCheck treatment plan.

Figure 5. Note the over treated labial crown torque of the upper incisors.

Now let’s compare a second patient’s treatment plan to GB’s.
Case presentation: patient RW.

Patient #2 is a 13 year old male who presented with a Class I malocclusion accompanied by a moderately deep overbite and anterior spacing in both arches.

Clinical findings.
- Class I.
- Deep bite, no gingival display.
- Mild spacing.
- Good growth potential.
Setting up the ClinCheck treatment plan.

Let’s examine how setting up the ClinCheck treatment plan for RW differs from the first patient.

1. Intrude upper and lower anterior teeth equally.

Case #1 required extra intrusion of his upper incisors due to excessive gingival display, and I utilized anterior bite ramps to help deliver that intrusion. Again, as noted in Case #1, by asking for both upper and lower anterior intrusion, attachments for retention will be automatically placed. In addition, pressure areas will automatically be placed to re-direct the aligner’s intrusive forces along long axis of the tooth, producing a more efficient force vector.

Figure 6. Prescription form showing both upper and lower anterior intrusion selected to address the deep bite.

This patient does not require upper incisor intrusion, therefore I will not prescribe bite ramps in this case.

Figure 7. No bite ramps indicated.

Figure 8. Note that pressure areas will not appear in the ClinCheck treatment plan 3D view, but are viewable from the Treatment Overview Form.
2. Setting the overbite.

For both patients, I asked for the overbite to be set at 0.5 mm at the 1\(1\), again assuming that over-treating the overbite in the treatment plan will result in an ideal finish.

3. No bicuspid extrusion requested.

I did not ask for bicuspid extrusion for either patient, because they had normal mandibular planes and both patients showed either a normal amount or a slightly excessive amount of gingiva when smiling. Had either of these two case required more bite opening or had “buried” upper incisors when smiling, I would have asked for extrusion of the bicuspids to help open the bite a little more and hopefully increase the vertical height of the lower face.

Retention.

Both patients were retained in Vivera® retainers. I have them made from the ClinCheck treatment plan, with just a slight amount of over-correction built into the prescription. (Usually, one stage of over-correction.) For example, patient #2 had a total of 24 aligners, including 3 stages of over-correction. I had his Vivera retainers made at stage 22. This assures that I have a retainer that is actually an active appliance, holding the teeth to where I have programmed them in the ClinCheck treatment plan. In particular, the patient’s initial deep bite is held at the minimal overbite of 0.5 mm. I have found that the long-term stability of the treatment is greatly enhanced by utilizing a retainer that holds all of the teeth in a prescribed relationship.
Conclusion.

When treatment planning a growing patient with a deep overbite, it is important to assess the patient’s skeletal type, smile line, incisor torque and overbite severity. Once this has been done, the proper tooth movement mechanics can be applied. The GS enhancements can then be applied as needed. This assures that a precisely applied anterior intrusion force as well as a precisely placed posterior extrusion force is not only attainable, but predictable.

Disclosure.

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