



Treating Deep Bite and Retroclined Upper Incisors with the Invisalign System



Dr Jack
Shen Chieh Lin
DDS, MS

A 39-year-old male patient with a history of orthodontic treatment for four second premolar extractions and endodontic treatment on teeth 11, 22 and 36 with porcelain-fused-to-metal crowns. The patient felt he had experienced relapse after previous orthodontic treatments. He wanted to correct his crooked teeth and deep bite, as well as his gummy smile. He was willing to undergo treatment with the Invisalign System in order to achieve satisfactory results.

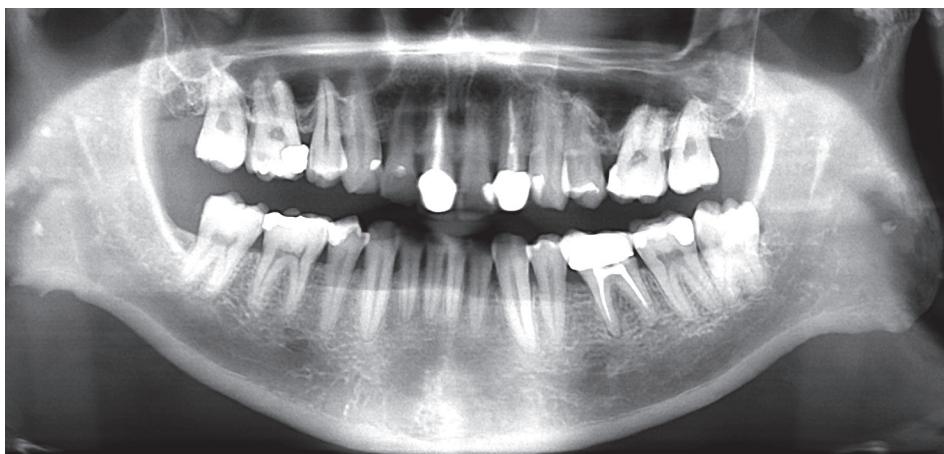
I. Intra- and extra-oral images before treatment



Clinical presentation

The patient presented with deep bite, as well as the oral parafunctional habit, bruxism.

II. Panoramic radiograph before treatment



III. Cephalometric radiograph before treatment



Clinical findings

- Mild crowding.
- Deep bite with maxillary gingival display.
- Class II malocclusion with teeth 16 and 26 mesially rotated.
- Retroclined upper incisors.
- Dental attrition due to bruxism.

Treatment goals

- Relieve crowding.
- Improve upper incisor labiolingual inclination.
- Correct deep bite.
- Improve gummy smile.

Treatment approach

Space was gained in the upper arch from expansion and derotation of teeth 16 and 26. Crowding was relieved in the lower arch by using the space gained from lower arch expansion and proclination of the lower incisors. Palatal root torque in teeth 11 and 21 was increased by 15 degrees to improve the labiolingual inclination, followed by upper incisor intrusion in order to correct the gummy smile and deep bite. Lower incisors were intruded to aid with the deep bite correction.

No interproximal reduction (IPR) was needed for this patient. Invisalign G5 deep bite features and Precision Bite Ramps, as well as Power Ridge features were key in correcting the deep bite and inclination of the upper central incisors.

Treatment details

Active treatment time

17 months.

Aligners used

- 25 + 14 upper aligners.
- 25 + 14 lower aligners.

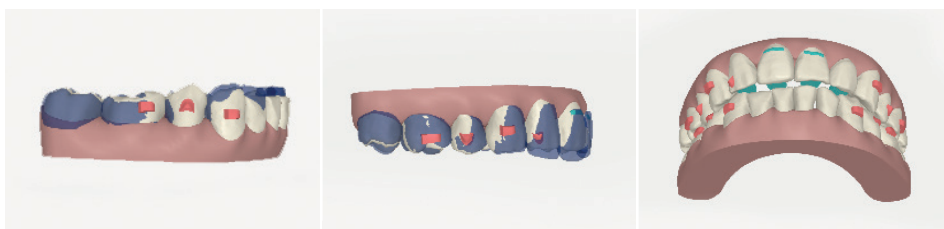
Attachments

- Optimised Deep Bite with Extrusion Attachment on tooth 35.
- Optimised Deep Bite Attachments on teeth 15, 25 and 45.
- Conventional rectangular attachments on teeth 13, 16, 23, 26, 33, 36, 43 and 46.
- Optimised Root Control Attachment on tooth 12.

Retention

Class II elastics, 1/4" 6 oz.

IV. ClinCheck superimposition



Retention

- Clear retainers during the day.
- Hawley retainer overnight.

Treatment outcome

- The patient was satisfied with his dental treatment and facial profile at the end of treatment.
- The deep bite and his gummy smile were successfully corrected; the upper and lower arches were aligned and labiolingual inclination of the upper incisors was improved.

Clinical tips

- In this patient, the use of Power Ridge features helped to correct the torque in his anterior teeth.

- The Invisalign G5 deep bite features (Optimised Extrusion Attachments, Optimised Deep Bite Attachments and Precision Bite Ramps) are effective in the treatment of deep bite cases. Staged intrusion is also useful for the treatment of such cases.

Impact on clinical practice

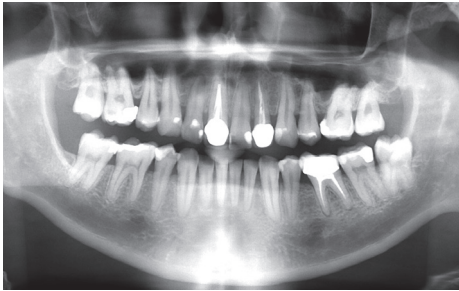
The Invisalign aligners provide an occlusal splint for patients with a deep bite and a parafunctional habit, such as bruxism. In addition, maintaining an aesthetic appearance and oral hygiene is easier during the course of treatment using the Invisalign System.

Doctors who treat deep bite with conventional braces face the difficulty of bonding the braces to the teeth,

V. Intra- and extra-oral images after treatment



VI. Panoramic radiograph after treatment



VII. Cephalometric radiograph after treatment



especially in patients who have parafunctional habits. For this reason, the Invisalign System is a much better tool to treat deep bite cases.

Treating doctors and their staff need to review a patient's compliance with the system (wearing time and Chewies usage) and oral hygiene at each appointment. Unlike conventional braces, which require much more attention, the efficiency of the Invisalign System means that dentists have more time to communicate with their patients during appointments, thus allowing them to better understand what they need and encourage them to adhere to treatment.

Conclusion

Treatment outcomes are better using the Invisalign System than conventional braces, particularly in patients with deep bite and bruxism. Good planning of the ClinCheck setup is a key factor for successful treatment outcomes. In this case, the patient's upper and lower incisors were intruded to improve his deep bite and gummy smile. Crowding was resolved by expansion and proclination

without IPR. The anteroposterior problem was corrected by derotation of the upper first molars together with the use of Class II elastics. Retroclined upper incisors were corrected using Power Ridge features. Staged intrusion, Invisalign G5 features and overcorrection of lingual root torque are useful methods to correct deep bite. After initial treatment with the Invisalign System followed by a refinement phase, this patient was advised to wear a clear retainer with bite splints for retention to prevent attrition and bruxism. The patient was satisfied with his treatment results at the end of the 17-month procedure.

Author disclosure

Dr Jack Shen Chieh Lin was provided an honorarium from Align Technology, Inc., for his contribution towards the creation of this case report.

Dr Jack Shen Chieh Lin

Jack Shen Chieh Lin received his Doctor of Dental Surgery degree from Chung Shan Medical University in 2001 followed by Master of Clinical Orthodontics from the National Yang Ming University in 2006. Dr Lin has been an Invisalign Platinum Elite Provider since 2014 and treated patients with the Invisalign System since 2009. He performs orthodontic procedures in his daily practice, collaborating with other specialists for interdisciplinary cases. Dr Lin is a diplomate of the Taiwan Board of Orthodontics and has been a clinical speaker for the Invisalign System since 2015.