

REALIGNING SMILES:

A CLINICAL JOURNEY THROUGH

CLASS II DEEP BITE CORRECTION

WITH CLEAR ALIGNERS



Clinical Case Report

CLASS II DEEP BITE WITH SEVERE CROWDING

Clinical case report

EXECUTIVE SUMMARY:

- Type of clear aligner: Invisalign® case.
- # of stages on original set up: 29.
- # of final stages on approved set-up following Treatment Plan Optimization™: 26.
- Total months of treatment: 18 months.
- Refinement: 1 refinement with 11 aligners.
- Notes: The initial Invisalign® setup had an unrealistic amount of movement outside the biological limitations

NARRATIVE:

Invisalign® stands out as an exceptional choice for patients of various age groups, including both adults and younger individuals, due to its ability to consistently deliver reliable and enduring clinical outcomes. Similar to other orthodontic methods, meticulous diagnosis and comprehensive treatment planning are pivotal in attaining the utmost favorable clinical results.

The meticulous evaluation and adjustment of the ClinCheck® treatment plan are of paramount importance, particularly when addressing tooth movements and the intricate interplay between intra-oral and extra-oral tissues. This thoughtful approach serves to refine the sequencing of stages and the extent of planned movements, resulting in optimal and enduring outcomes.

Illustrating these principles, this case study showcases the successful treatment of an adult patient grappling with Class II malocclusion, deep overbite, and pronounced crowding. Employing Invisalign®, this treatment was further enhanced by the application of Clear Treatment Planning Solutions, which systematically improved the ClinCheck® treatment plan. Remarkably, this collaboration led to a noteworthy 10% reduction in the overall treatment timeline.

DIAGNOSIS AND TREATMENT PLANNING

A 47-year-old female patient with a chief concern of a “dark front tooth” (UL1) and misaligned teeth.

Clinically, the patient presented a Class II malocclusion with significant lower anterior crowding, protrusive upper incisors, excessive Curve of Spee, overjet and overbite.

At the intraoral examination we found a dark upper left central incisor with a history of previous endodontics and apicoectomy treatment (image below).

Periodontally, the patient had thin biotype and gingival recession of LL1.



Radiographic evaluation showed a Class I skeletal pattern with a lower-than-average mandibular plane angle and upper and lower incisor inclinations within normal limits.

The panoramic radiograph showed root resorption at the apex of UL1, normal dental development with an absence of third molars (image below)

The patient had good soft tissue support, no significant facial asymmetries, an obtuse nasal labial angle, asymptomatic TMJ and no parafunctional habits.



Treatment goals included resolving crowding of the maxillary and mandibular arches, correcting the protrusion of the upper incisors, achieving an optimal overjet and overbite relationship and leveling the Curve of Spee.

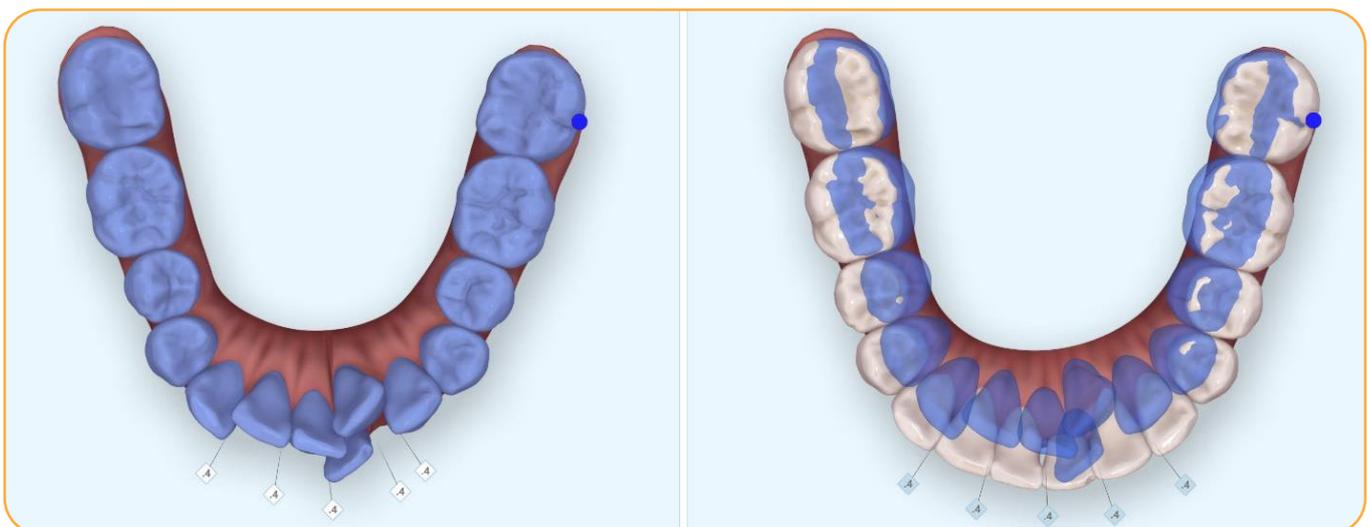
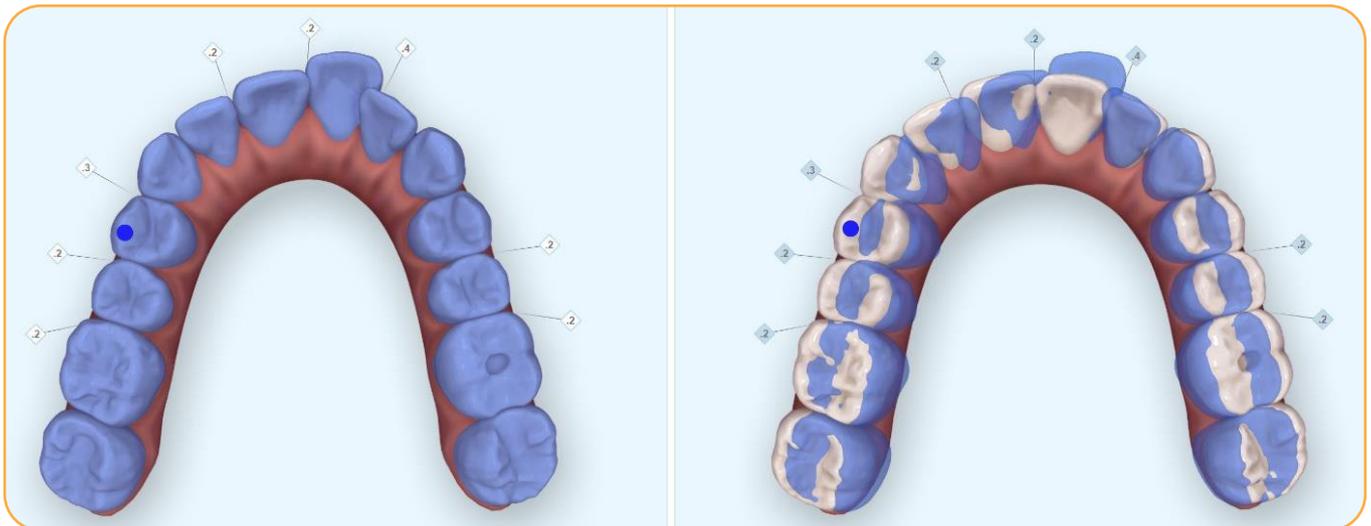
The patient was informed that orthodontic movement of UL1 could result in further root resorption and potential tooth loss and the patient decided to avoid extraction until the end of orthodontic treatment.

INITIAL CLINCHECK® VIRTUAL SETUP

The Invisalign treatment was plan set up initially with expansion, interproximal reduction (IPR) and no extractions.

The first ClinCheck treatment plan had 29 upper and lower stages and called for generalized expansion of 2-3mm, significant proclination of the lower anteriors and IPR (images below).

This initial ClinCheck® treatment plan was referred to Clear Treatment Planning Solutions for Treatment Plan Optimization™.



TREATMENT PLAN OPTIMIZATION™

Clear Forward evaluated the case and provided a new optimized ClinCheck treatment plan.

During the Clear Forward optimized treatment planning process, it was discovered that the proclination planned for the lower incisors was outside the biological limitations.

Also, the thin biotype of the gingival tissue, as well as the gingival recession of tooth LL1, needed an optimized approach to achieve a more predictable and stable outcome that would take into consideration the long-term health of the periodontal tissue.

One of the biggest advantages of Invisalign as a treatment modality is the ability to use ClinCheck® treatment planning software as a tool.

In this case, it allowed the Clear Forward Clinical Experts to explore different expansion and IPR combinations before making a final decision on the need for extractions.

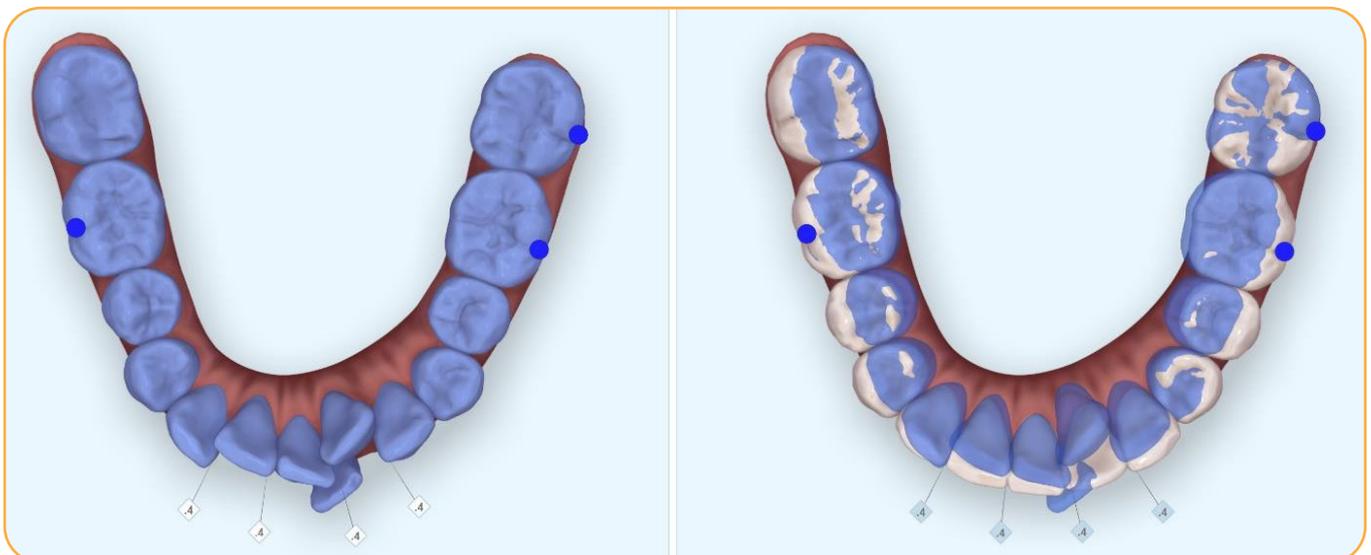
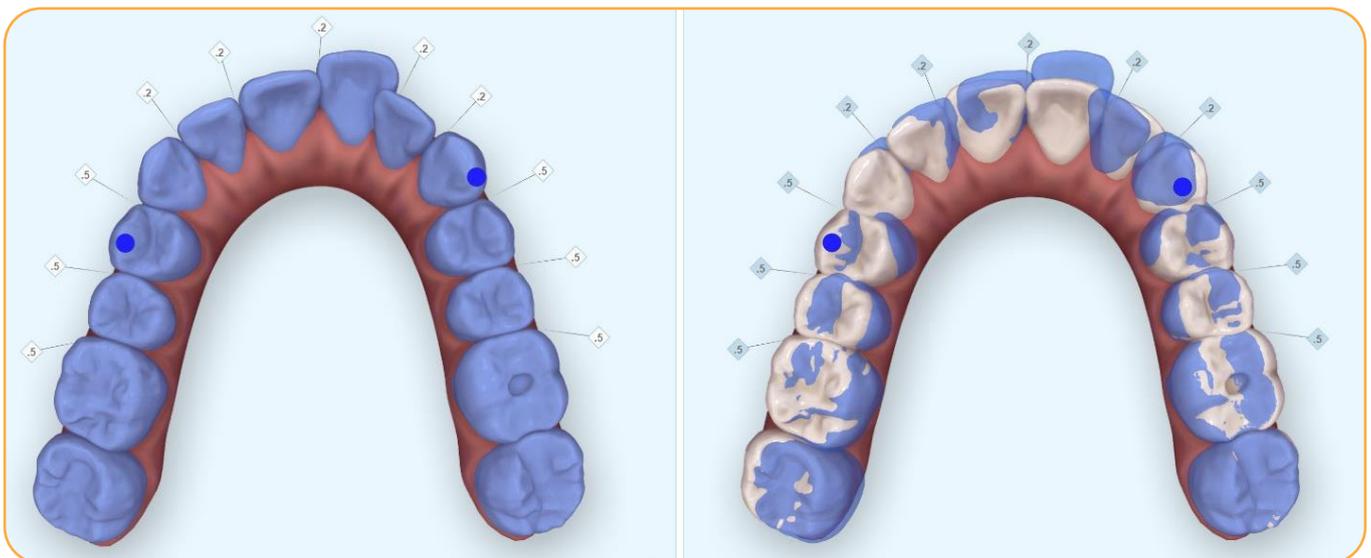
This is particularly important for treating doctors and patients who might be considering an extraction option, as extractions are often difficult for patients to accept.

The Treatment Plan Optimization™ was developed by Clear Forward after only one week of modifications.

This included extraction of LL1 to solve the lower crowding and avoid unhealthy proclination and gingival recession, decreased the overall expansion for better generalized periodontal health, intrusion of lower anteriors to level the Curve of Spee and corrected the deep bite while maximizing posterior IPR to optimize the overjet and improve the canine anterior-posterior relationship (images below).

Attachments for the space closure at the extraction site were also requested to aid with root parallelism.

The approved optimized ClinCheck treatment plan had 26 upper and lower stages.. This represents a 10% reduction in total treatment time (3 aligners or 6 weeks of treatment time) which has implications of increased profitability and improved patient experience.



OUTCOMES

During the course of treatment, tooth UL1 was compromised and lost resulting in a modified treatment goal and plan for placement of a single implant for UL1.

Additional aligners were requested to finish the anterior overjet and overbite relationship as a total of 11 upper and lower additional aligners were needed to finish the case.

One of the significant advantages of Treatment Plan Optimization™ while treating deep bite cases is the ability to begin treatment on both arches simultaneously.

After a total treatment time of 18 months, complete correction of all initial treatment goals was achieved without any detrimental effects to the soft tissues (image below). The improvement on the bilateral canine relationship as well as the ideal overjet and overbite accomplished is to be noted. A black triangle persisted interproximal to the extraction spaces which is common in these types of extraction cases. Further IPR to close it was not desired in order to maintain the ideal overjet achieved.

The use of the Invisalign Power Ridge® was successful in maintaining the torque of the upper anterior teeth during alignment, while simultaneously correcting the overbite. Patient compliance was excellent.

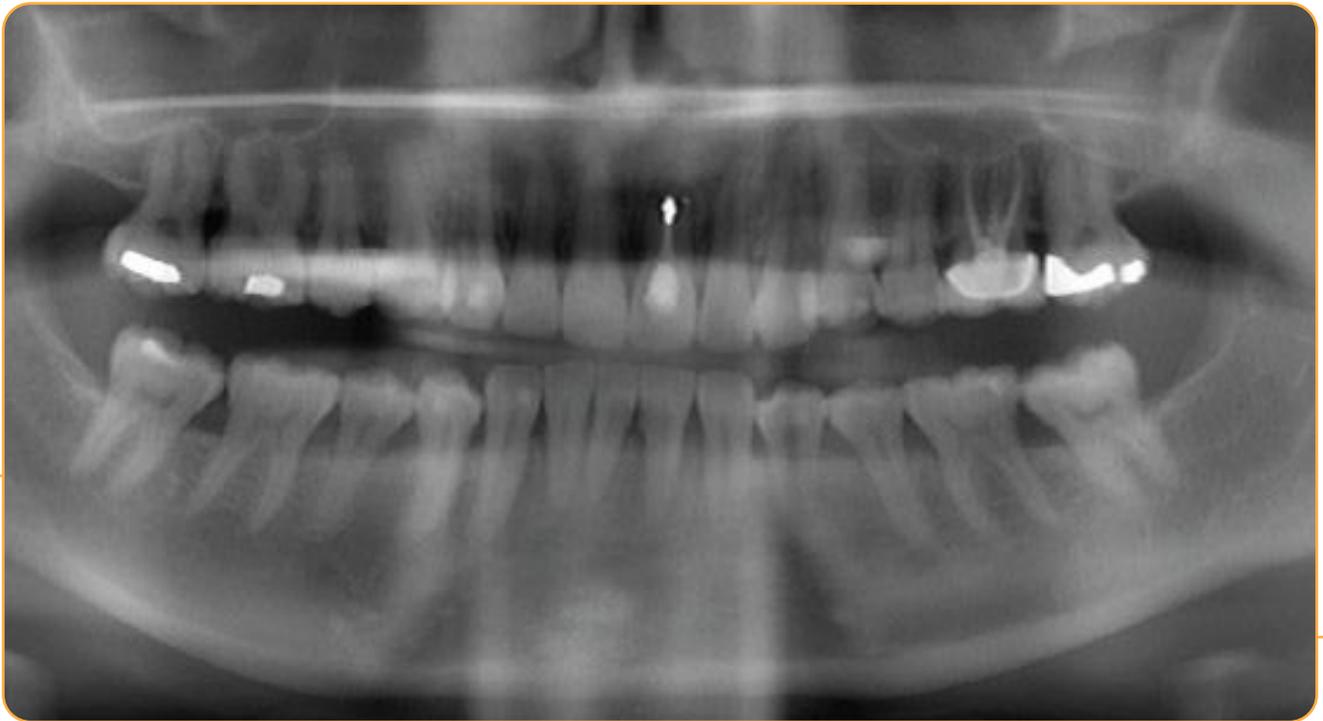


This case also demonstrates the ability of Treatment Plan Optimization™ to level a Curve of Spee with aligners in an adult patient.

This Curve of Spee Leveling was accomplished via extrusion of the lower buccal segments and intrusion of the lower anterior teeth.

Post-treatment radiographs show improved root parallelism (image below). Incisal inclinations appear similar to the pretreatment angles, thus showing an effective treatment plan approved in the ClinCheck treatment plan set-up.

Retention was accomplished with a fixed lingual bonded retainer for the maxillary centrals in addition to Vivera™ retainers on both arches.



CONCLUSION

As the clear aligner market and patient demand continues to increase, the variety and complexity of malocclusions undergoing Invisalign treatment also continues to evolve.

Invisalign® has invested a significant amount of resources to provide doctors with the necessary tools to achieve more predictable and stable results however, the treatment planning decisions of each treating doctor are essential for successful results and optimal patient-doctor experience.

Clear Treatment Planning Solutions allows doctors to better identify Invisalign® cases to treat and seamlessly assists with the treatment planning process through their proprietary Treatment Plan Optimization™ process to improve clinical results and to enhance doctor education, reduce ClinCheck® modifications, shorten treatment time (in some cases) and increase Invisalign® opportunities which ultimately increases the profitability of clear aligner treatments in the practice.

This case report is an excellent example of the many benefits that both doctor and patient experience with Clear TPS.



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