

Multidisciplinary approach to a deep bite case as an alternative to gaining space for the anterior teeth with biterise through full arch restorations



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Dr. Kristina Baumgarten qualified in 2006 from RWTH in Aachen, Germany. Kristina studied further and completed a Curriculum in Paediatric Dentistry 2008 and Periodontology 2011. She is the proud owner of Zahnärzte Baumgarten in Siegen, Germany where she has been an Invisalign Go® provider since 2016, and became an Invisalign® speaker in 2019. Following her passion for delivering the highest aesthetic treatments, Dr. Baumgarten has digitised her practice and empowered her team with the latest technologies to deliver the best possible patient experience.

She has a certification for Digital Smile Design 2020 and completed a Diploma of Clear Aligner, City of London Dental School, and is also an Invisalign® Elite Apex provider since 2021, as well as a Key Opinion Leader for Align Technology.

Abstract:

In recent years, dentistry has undergone a transformation, moving away from 'drill and fill' dentistry towards comprehensive diagnostics and planning, facilitated by digitisation. Patients have become more demanding, expectations higher, and knowledge more extensive. To meet these demands and explain achievable treatment goals, visualisation of treatment outcomes is helpful.

In recent years, dentistry has undergone a transformation, moving away from 'drill and fill' dentistry towards comprehensive diagnostics and planning, facilitated by digitisation. Patients have become more demanding, expectations higher, and knowledge more extensive. To meet these demands and explain achievable treatment goals, visualisation of treatment outcomes is helpful.

In this case, a female patient of 32 years old, presented her concerns as her upper front teeth started to become sensitive due to the loss of enamel and her incisor edges were chipping. The patient wanted restorations to prevent more substance loss. The patient was aware of the need for treatment due to her deep bite, associated occlusal interferences and significant loss of tooth structure. However, she had concerns about undergoing a significant aesthetic change in the wrong direction. Additionally, she initially lacked understanding of the necessary pre-treatment with aligners. On one hand, the cost factor deterred her, while on the other hand, the time factor was daunting. By visualising the treatment steps and the final outcome before treatment using Invisalign Smile Architect feature in ClinCheck software, fears were alleviated, and misconceptions were corrected.

On the provider's side, the minimally invasive approach was of great importance and could be considered in the planning phase. The treatment material and its layer thickness were predetermined in collaboration with the laboratory before treatment. The treatment proceeded according to a precise digital plan, without encountering new surprises.

This abstract aims to highlight the benefits of digital planning and combined ortho-restorative approaches.

Initial records:

Age of the patient: 32

Sex: Female

Patient's chief concern(s):

The upper front teeth started to become sensitive due to the loss of enamel and her incisor edges were chipping. The patient wanted restorations to prevent more substance loss

Relevant dental history: Severe loss of enamel in upper front and on first molars

Relevant social history: None

**Clinical findings:**

Anteroposterior relationship right side: Class II

Anteroposterior relationship left side: Class II

Overbite: 80%

Overjet: 0–2mm

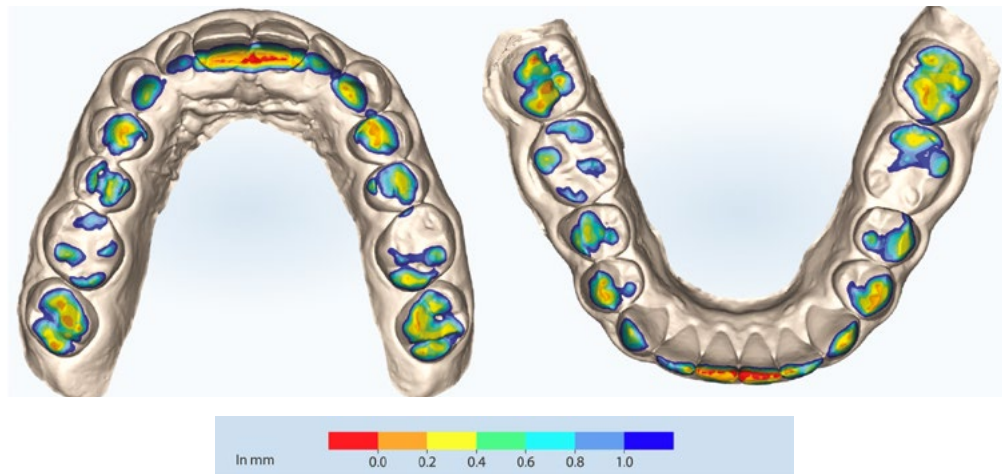
Upper arch: "U" shape

Lower arch: "U" shape

Other: Extensive loss of enamel on the middle incisors.

iTero™ scan (initial):

Occlusogram:



Treatment objectives

Aesthetics:	Low smile line, tooth width discrepancy
Function:	Deep bite, class II
Dentition:	Fillings: 16, 26, 36, 46 Hypomineralisations on first molars
Biology:	Normal biotype, and periodontal situation Recession 1.4 and 1.5

Treatment plan

Due to a deep bite, the patient lost a lot of substance in her anterior teeth. In addition to compromising her aesthetics, her teeth were getting sensitive. Because of the deep bite, there was not enough space for restorations. The patient wanted a minimally invasive approach, so a full mouth restoration was not an option. Instead, we opted to gain space for the restoration with aligners and subsequently restore her front teeth.

Treatment timeline and sequence

Number of initial aligners: 16 upper, 13 lower

Frequency of change: 7 days

Additional information: Patient could not complete the ideal treatment plan as they emigrated from the country

ClinCheck® virtual simulations of changes:

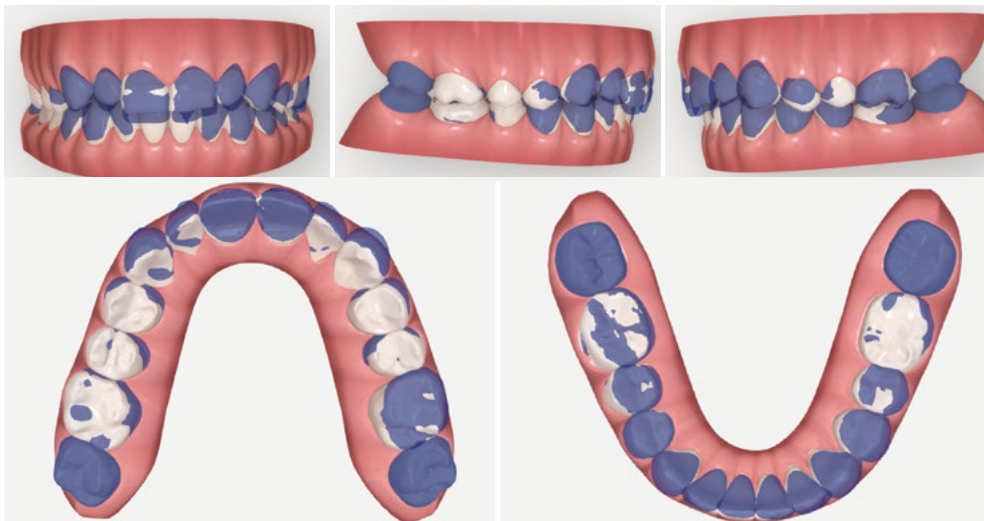
I. Initial



II. Final



III. Pre-post superimpositions



Treatment progress:

The patient attended follow-up appointments every four weeks. Due to her consistent use of aligners, she never experienced any fitting issues. She noted a relaxation in her jaw joint from wearing the aligners and liked wearing them as they protected her tooth substance.

Treatment outcomes:

The treatment plan included teeth alignment with 16 upper aligners and 13 lower aligners. Veneers were placed on teeth 13–15 and 23–25, while crowns were placed on teeth 12–22, 36 and 46. Gingival correction was performed using a laser. The patient's overjet was measured at 30% and the overbite was 2 mm.

End of treatment records:**I. Virtual results****II. End of orthodontic treatment****III. End of restorative treatment****Retention:**

Vivera™ retainers were prescribed for retention, and recommend the patient to wear them full time for the first six months, and then only at night.

Clinical discussion:

The treatment of patients with a deep bite and the resulting massive substance loss of the palatal surfaces was previously approached purely restoratively. This approach often contradicted minimally invasive therapy principles and frequently resulted in aesthetic compromises. In this case, the patient had a pronounced deep bite, which led to a forced bite position due to early contact on the upper front teeth. The enamel on the palatal surfaces of these teeth was completely eroded, causing sensitivities that prompted the patient to seek treatment.

Using a purely restorative approach would have required a significant increase in bite height, leading to unpredictable temporomandibular joint adaptations. Additionally, creating space would have necessitated further substance removal from the palatal surfaces, potentially requiring endodontic treatment of these teeth. To achieve an aesthetic improvement for her gummy smile, extensive surgical crown lengthening would have been necessary. Additionally, the too-narrow widths of the lateral incisors would have remained unchanged with this approach.

Instead, a treatment plan incorporating clear aligners was proposed. This plan was more minimally invasive and involved fewer compromises, which was appealing to the patient. Visualisation tools such as ClinCheck In-Face visualization and Smile Architect feature for ClinCheck software, made the plan easy for both the practitioner to create and the patient to understand. Ultimately, the combined orthodontic and restorative treatment provided the optimal aesthetic, functional and medical outcomes.

Conclusion:

Patient and Doctor Experience: The patient loved the treatment. Initially, she feared she would look too different after the procedure. However, the in-face visualisation soothed this fear before treatment began, making it easier for her to agree to proceed with the treatment.

Planning: Digital planning resulted in a more secure treatment path, providing greater confidence in the process.

Biology: We were able to treat the patient in a minimally invasive manner, preserving more of her natural tooth structure.

Volume: Because of the pre-restorative alignment, the volume could be planned independently of the initial tooth positions. The movement of teeth allowed for the restorations to be fabricated near to ideal.

Communication: Sharing visualisation of the treatment beforehand made it much easier for the patient to agree to the treatment. Communication and planning with the dental technician were optimised because of the digital workflow. This workflow also helped identify potential problems before starting treatment.

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