Small changes, big impact

Bite raising, malocclusion correction and prosthetic treatment for a new smile with CEREC Ortho

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Introduction

Functional therapy and a new smile with CEREC? That’s always an interesting challenge for me. I only recently completed a very complex case thanks to the new CEREC Ortho software, selective restorative procedures, and the outstanding compliance of the patient.

In my practice, I deal very frequently with aesthetic issues. I have been using the CEREC system since 2008 for these situations; I began with CEREC 3, after 2010 I worked with CEREC AC and Bluecam, and one year ago, I acquired the powder-free Omnicam in order to integrate the CEREC Ortho orthodontic software. Functional or orthodontic indications are not one of my specialties, but my requirements for the aesthetic treatment of my patients, which for me always included small corrections of incorrect positions, made CEREC Ortho a logical step for me.

CEREC Ortho offers digitisation that provides me with a higher level of precision and a deeper understanding of the overall workflow in this area—as is also the case with CEREC for prosthetics. Furthermore, I can also treat my patients more quickly and to their satisfaction, as the splints are manufactured in my own laboratory using the already converted models delivered by CA Digital.

Case report

I recently employed the full spectrum of these treatment options with a 30-year-old female patient who initially presented with tooth 26 broken off. I also diagnosed an end-to-end bite with severe loss of substance in the front (Figs. 1a & b).

I wanted to give the young woman a beautiful smile again and it quickly became clear that repairing the compromised tooth would not be enough. To achieve
the desired smile, correction of the malocclusion was needed in addition to bite raising and various restorative treatments. In the first step, the patient received an occlusal splint for six months (raising the bite by 2 mm as a fixed splint, Fig. 2).

In the second step, clear aligners were manufactured for the patient to correct the malocclusion in the upper jaw. This was necessary in order to optimise the anterior teeth axes for the prosthetic treatment. Due to the very short teeth, I was aware that there were only limited chances of success. I advised the patient of this and indicated that even small changes in the axis would improve the situation. Furthermore, I had already seen in other cases what changes are possible and have a good load-bearing capacity. The patient was 100% ready and persevered until this stage of treatment was completed, otherwise, we would probably have seen no progress.

Five times the patient received three splints in different thicknesses with which the teeth were moved gently and retained with the hard splint until the end. Every step was based on an altered situation that always came closer to the objective. At CA Digital, a new impression of the situation was needed after three steps, which made it possible to better check the situation and also to adjust the movement situation.

After three months, we had achieved an unspectacular but very important result: the correct axis of the anterior teeth was almost achieved. We were able to “tip” the incisal edge labially, which was very important for the prosthetic treatment. It can barely be seen with the naked eye as we are dealing in the micrometre range, but this alteration was significant for bite raising in the extension of the axis, as it would make correction possible. The result can be seen clearly in Figure 3 as the anterior teeth were moved in facial direction by around 0.4 mm—a small but decisive advance from the initial situation of the prosthetic construction.

I then produced the posterior tooth restorations that were required for the bite raising in just one session using hybrid ceramics. The advantage for patients is that, due to the flexible structure thickness, the ceramics increase the level of comfort with the level of pressure expected. Furthermore, the restoration was not necessarily perceived as a change in comparison to the natural tooth after the splints for bite raising were worn. I treated the teeth that were free from defects without additional preparation, which requires a material with a high edge strength that can be prepared extremely thinly in order to allow a clean transition to the tooth. The defect at 26 was integrated into the restoration for the bite raising. Like all teeth of the upper jaw, 27 also received a table-top or fixed bite block (Fig. 4a).

Five days later, the mock-up, which had already been produced in the session for the posterior tooth Fig. 3: Final situation after five aligner steps. The final model was placed over the initial model to show this. Changes in position are made visible using the colour scale.

Figs. 4a & b: Posterior tooth restoration for bite raising in the model and in situ.
treatment, was transferred into the final restoration made from silicate ceramic. The mock-up gave the patient the opportunity to check the aesthetics and functioning for herself. The software provides the option of directly transferring the shape confirmed by the patient, i.e. the situation previously produced in plastic is recorded digitally and the shape can then be implemented one-to-one chairside (Figs. 6a & b).

With the bite raising, the patient obtained a new smile as a result of a slight shift of the dental arches and preparation-free treatments.

The unusual thing about this case was that a better result could be achieved through tooth movement for the anterior tooth restoration in connection with bite raising. It is an enormous advantage for us now to be able to digitise malocclusion correction. As an experienced CEREC user, it was initially unusual for me to be able to exchange the patient’s data with the laboratory (CA Digital) immediately from the computer, as a systematic digital workflow had not yet been integrated into the practice in all treatment areas. Now I also use this option for major prosthetic restorations that we cannot manufacture chairside and take advantage of the speed. I scan in a case and I can then discuss the case directly with the laboratory, even when the patient is still sitting next to me in the treatment chair. If there are any deficits in the data set, I can rectify them immediately by carrying out a new scan, which is no problem for the patient and costs me only a small amount of time. I feel that this is a great advantage as I now receive direct feedback if I want, when otherwise the impression taking, transport, and transferring into plaster would take a great deal of time—not to mention the loss of precision. It is no longer necessary to schedule an additional session as a result of inaccuracies in the impression that only became apparent hours later.

The patient, who cooperated very well, benefited in the case presented here primarily from the direct transfer of the new bite situation to the final restoration and also from the mock-up to check the anticipated outcome.

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