

Perfect provisional restorations

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This article presents a case demonstrating that using modern temporary crown and bridge materials facilitates the fabrication of temporary restorations that achieve natural aesthetics and meet the highest standards of reliability.

Patients have high expectations, particularly when it comes to the aesthetic results of dental restorations. This is because, on the one hand, sub-optimal results are mostly visible straight away and, on the other hand, “beautiful teeth” are all-important to achieve that “radiant smile”.

Modern methods assist dentists in many ways, allowing them to achieve predictable results, especially in terms of aesthetics. In addition to the use of “hardware” such as x-rays, photography and special software which can simulate various results on the monitor, the diagnostic mock-up is also important and, of course, consultations with the patient, which also deal with the limits of dental restorations. The mock-up enables the result of the planned treatment to be assessed in advance and requires comparatively little time and effort. Moreover, the result can be realised on a temporary basis using the relevant materials without having to perform irreversible invasive measures straight away.

The temporary materials used in this process are of particular importance: They must be available in tooth shades and be able to withstand the high loads in the oral cavity so as to bridge the time which is required by the patient to accept or, as the case may be, reject the changes which are knowingly effected in conjunction with the temporary restoration.

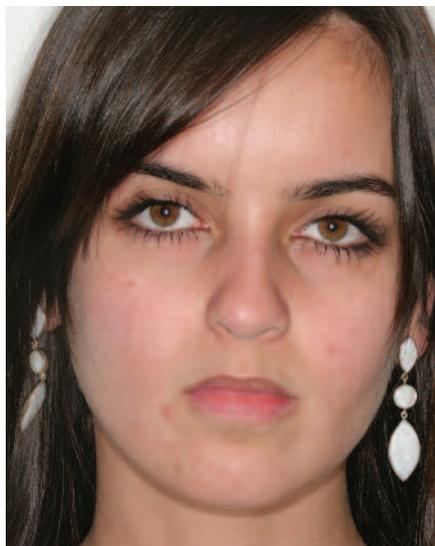


Figure 1: Full face portrait of the patient.

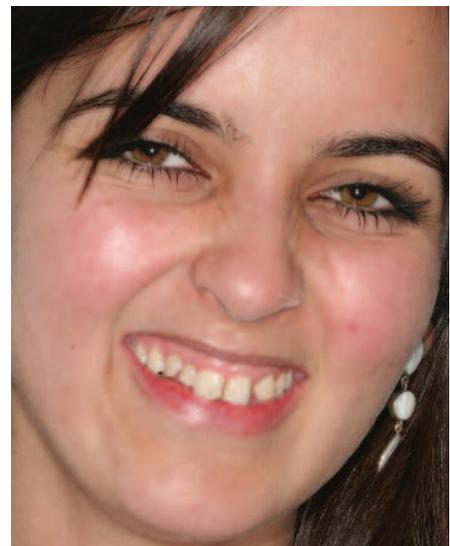


Figure 2: Unharmonious upper anterior region, tooth 22 is missing.

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Figure 3 and 4: Close-ups of the clinical situation.



Figure 5: Right side.



Figure 6: Left side, tooth 22 is missing.



Figure 7: Unharmonious dental arches.



Figure 8: Dysgnathic tooth position.

This clinical case is an impressive example of the possibilities offered when a wax-up and mock-up are combined:

A 27-year-old female patient presented at the practice wishing to improve the situation in the maxillary anterior region, which she felt was unsatisfactory (Figures 1 & 2). The date for her wedding had already been set.

The findings showed agenesis of tooth 22, marked palatal dislocation of tooth 12, the inhomogeneous course of the maxillary anterior arch, clearly separated middle incisors as well as further malpositions in the upper anterior region (Figures 3–8). The analysis of the posterior region showed clear Class II malocclusion.

To begin with, impressions of both jaws were taken and

models were produced. Following careful analysis of the models, a diagnostic wax-up was prepared in the upper anterior region with the aim of correcting the malposed teeth, replacing the missing tooth 22 and visually shaping the dental arch (Figures 9–12).

In the next step, a silicone impression was taken over the wax-up on the model and the resulting impression was then trimmed carefully: The course of the vestibular gingiva can just be recognised when the impression is in place, incised markings enable precise intraoral positioning of the impression. This is followed by the careful selection of shades for the patient.

The method presented describes the fabrication of a restoration and simultaneous adhesion to the conditioned



Figure 9: Frontal view of wax-up.



Figure 10: Detailed view of wax-up.



Figure 11: Right side of wax-up.



Figure 12: Left side of wax-up.



Figure 13: Filling of the silicone impression.



Figure 14: Reinsertion of the filled impression.

teeth in one step. Alternatively, the temporary restoration can be produced and finished in the conventional manner, i.e., without simultaneous adhesion. Temporary adhesion is then carried out in a separate step.

Next, the maxillary anterior teeth 13-23 were selectively conditioned for just 5-10 seconds using phosphoric acid, the acid was rinsed off and an adhesive compatible with self-cure composites was applied to the etched areas. After light polymerisation of the adhesive, the silicone impression was filled with Structur 2 (VOCO GmbH, Cuxhaven, Germany), the self-curing composite material for the fabrication of provisional crowns and bridges, and reinserted on the dental arch. During the plastic phase, the

excess material can be simply removed thanks to prior careful adaptation of the impression and the right time for removal of the impression can be reliably determined based on the degree of polymerisation of the material in the mouth. Due to the prior adhesive stage, the restoration remains in the mouth during this time.

Following complete polymerisation, after 4 minutes the temporary restoration can be carefully finished intraorally. Suitable instruments for this are a sharp scalpel and different sized carbide rotary instruments. Should minor corrections be necessary, these are done using the material itself or the light-curing (flow) composite. The finished result is achieved using appropriate silicone polishers for composite materials.



Figure 15 and 16: Temporary restoration of the upper anterior region.



Figure 17 and 18: Close-ups of the temporary restoration with Structur 2 (VOCO).



Figure 19: Lateral view from the right.

Figure 20: Lateral view from the left.

Oral hygiene is of great importance here: Interdental space brushes, dental floss and, as a further aid, a chlorhexidine-containing solution were used on a regular basis.

As the patient was concerned, the time and effort spent on the treatment was well worth it. When the forced smile prior to the treatment is compared with the smile after finishing the temporary crowns, the difference is striking (Figures 15–21). No doubt the pending wedding also plays a big role here.

From a dental perspective, this first stage of treatment to visualise the end result proves to be a complete success. The patient and dentist were given the chance to “try out” the final result without the need for any invasive measures. In this case, the patient was in complete agreement with the subsequent measures required in order to achieve the end result. This also resulted in a high level of positive compliance with the necessary treatment steps.

Dental experience, the targeted use of diagnostic



Figure 21: The bride on her wedding day.

measures, manual dexterity and the use of high-quality materials led to the impressive result which won over the patient even as a temporary version.

The temporary restoration was removed some time later. Given the solely punctiform conditioning of the teeth for adhesion, the restorations can be removed with a scaler, a suitable curette or a strong probe. The restorations are normally completely destroyed during their removal. It is not uncommon for residue in the adhesion area to have to be carefully removed with rotary instruments.

The patient is currently undergoing orthodontic treatment. The goal is alignment of the maxillary anterior teeth and closure of the gap between the existing teeth. Furthermore, the dental arches are to be harmonised and stable occlusion is to be produced. Following conclusion of the

orthodontic measures, the missing tooth 22 will be replaced – the final course of treatment for this has yet to be decided. Both restoration with a mini-implant and with an adhesive bridge are conceivable.

Summary

Model and photo analysis, diagnostic wax-up, mock-up and temporary restorations are important tools for enlightening patients and anticipating the results which can be achieved. Using the method presented here by way of example, this can be accomplished without the need for irreversible treatment steps and only requires comparatively little time and effort. The prerequisites are a careful diagnosis and the use of high-quality products like Structur 2 (VOCO) for the temporary restoration.