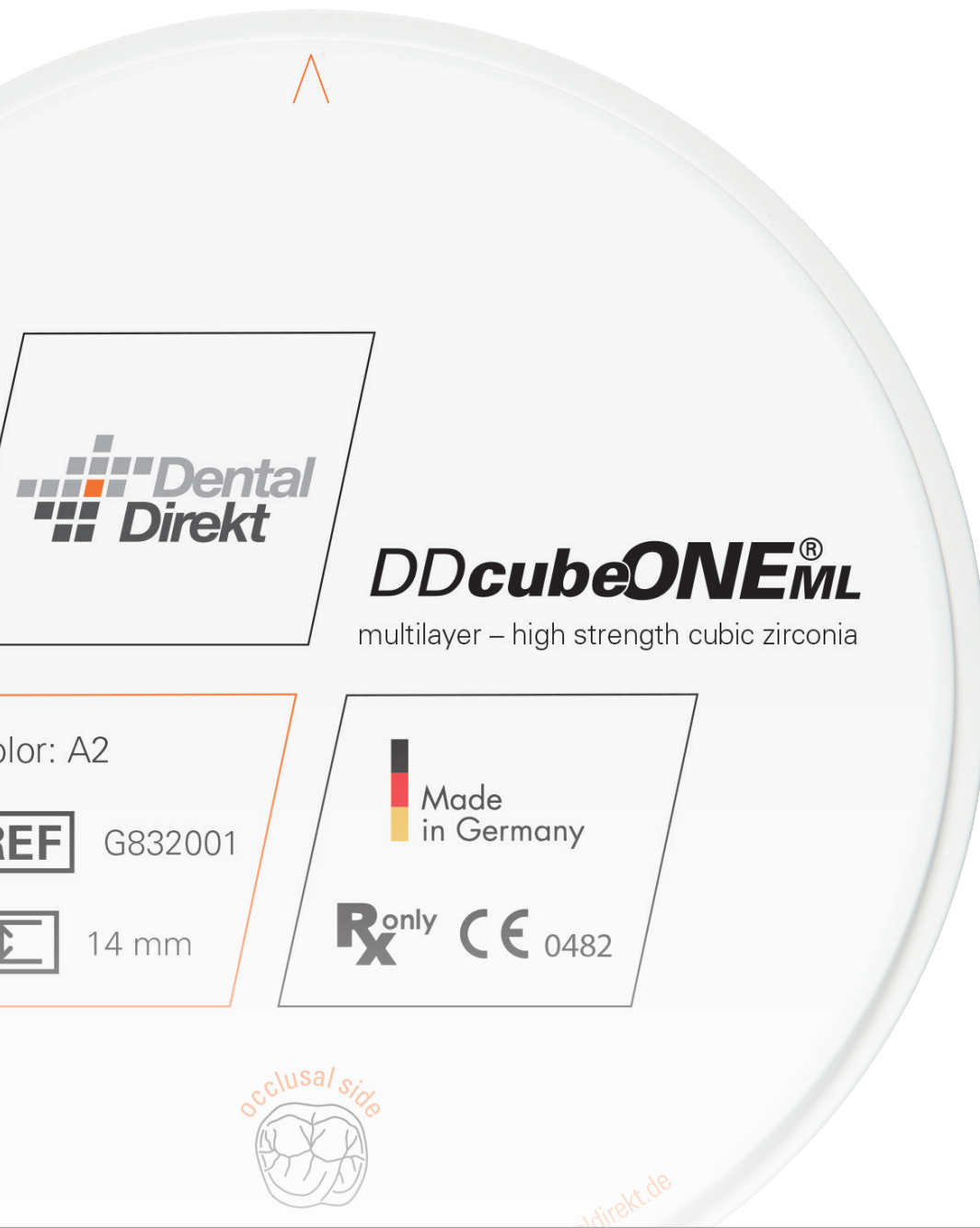


DAILY PRACTICE

Bite safely with Wolfs Art

// From the long-term temporary to the long-span
Zirconia restoration made of DD cube ONE® ML //
by MDT Roman Wolf, Germany



CLOSE TO YOU



The long-term temporary as the basis for a successful definitive restoration

On the journey to an accurately fitting dental restoration that is esthetically pleasing for the patient, it is indispensable for me to consider the patient's individual wishes, requirements, problems, etc. as early as the provisional phase. In my opinion, the temporary restoration is the pivotal point and an important intermediate step in the fabrication of the definitive restoration. The following case shows how to proceed when planning a temporary restoration and how to combine digital and conventional methods during implementation.

Case analysis and planning:

An important aspect that should not be neglected is harmonizing the dental prosthesis with the individual, dynamic facial expression and posture of the patient. This harmony cannot be achieved on the basis of static models or impressions from the dental practice. For this reason, the patient comes to the laboratory for a consultation in order to describe the initial situation in as much detail as possible. In addition to recording his personal situation and wishes, dental photography is used to record the face from all relevant angles. Moreover, further important information can be obtained by analyzing his posture as well as pronunciation. The aesthetic conspicuous features that should be taken into account in this case are:

- negative smile line
- Diastema
- Length and width ratio of teeth in relation to the golden section



Fig. 1: The initial situation of the patient is recorded in detail.

Aesthetic and phonetic Set-up:

In the presence of the patient, the tooth shape and color are selected and then the esthetic and phonetic Set-up is made. The advantage of this is that the patient can actively shape how his or her future dentures will look. Nothing is more individual than the patient's ideas and wishes. The Set-up is a good basis for discussion, as it reveals to the patient which esthetic design options are available to us. In this way, surprises later on can be minimized or completely ruled out.

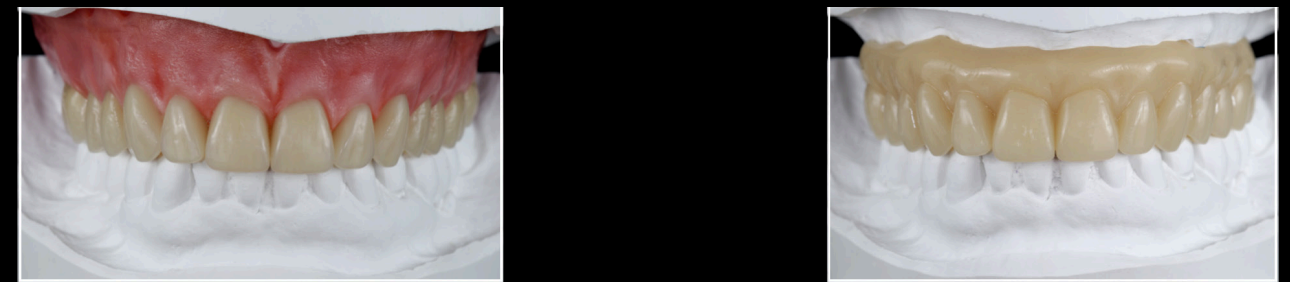


Fig. 2: For the current case, a conventional diagnostic Set-up was established in the presence of the patient.

CAD/CAM transmission:

Based on the analog lineup the Set-up was digitized and milled as a dental arch from tooth-colored polymer (DD poly X ML). The advantages of the temporary milled from "one piece" are clear: Uniform, homogeneous material properties as well as optimum strength and stability. Thanks to the multilayer process, only minimal finishing is required to create an esthetically individual touch..

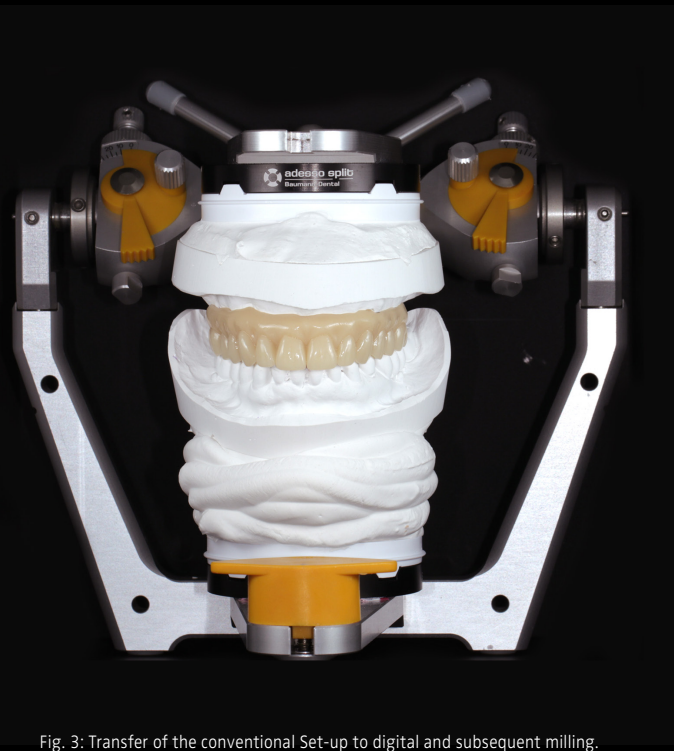
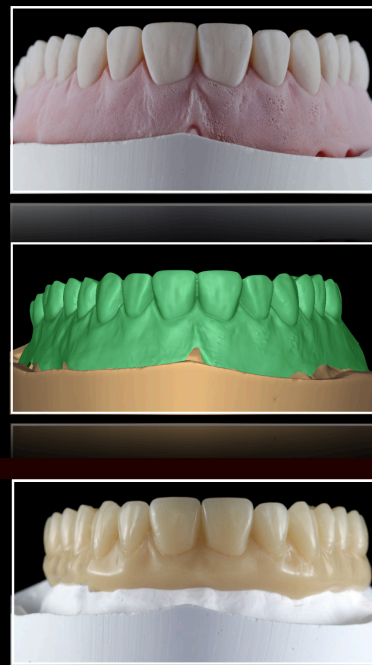


Fig. 3: Transfer of the conventional Set-up to digital and subsequent milling.



Insertion:

On the day of surgery, the temporary restoration was remodeled at the implant sites and prepared for insertion. Since this is "only" a temporary restoration, the soft tissue parts were not remodeled in pink polymer.

Conclusion:

There are many advantages to solve the esthetic and phonetic Set-up in a conventional way rather than digitally. In addition to the personal consultation of patient wishes, etc., you receive a lot of dynamic data that a static model does not provide. It creates empathy for the patient on the part of the dental technician to include the patient's requirements and wishes right from the start, and at the same time it promotes trust in the work of the dental technician on the part of the patient.



Fig. 4: Detail view of milled temporary restoration.

The finished temporary restoration is impressive: stable and aesthetically pleasing with minimal effort.

Finally, the functionally and esthetically rationally designed temporary provides us with further important parameters for the definitive work at the end of the wearing period and thus forms the starting point for starting the implementation at full throttle.

From long-term temporary to final restoration – milled from DD cube ONE® ML and colored with DD contrast®.

After first dealing with the temporary restoration made of DD poly X ML and describing the importance of the temporary restoration as an important and integral part in the finishing process, we now turn to the completion of the definitive implant-supported zirconium oxide restoration made of DD cube ONE ML, H22 in shade A3 after a 6-month healing phase.

Although we have already taken the patient's wishes for functionality and optical design into account in the provisional phase, the end of the wearing period is an important interim stage, when the practitioner and patient can jointly check which adjustments still need to be made. Parameters relating to the bite position and jaw relations as well as shaping and shading requirements are often optimized during the implementation of the final restoration. By means of backward planning, the implant restoration has already been planned and implemented in such a way that the denture can be fabricated optimally on it. The great art now consists of precisely transferring the actual situation and adjusting the final details.

Transfer of the implant positions:

In order to be able to precisely transfer the actual position of the implants to the model, a screw-in cotter pin was created on the initial model. This step is important because the zirconia bridge, which is milled from one piece, does not forgive errors in the sense of deviations and would otherwise break.

The fabrication of the individual tray is also not to be neglected in order to guarantee an accurate transfer. Here, the space conditions for the impression material were created in such a way that there are uniform layer thicknesses of the material. In addition, care was taken to ensure that the tray has complete guidance over the impression posts to the final impression position on the bar. This guarantees that the practitioner can easily find all screw channels and that the tray is not pushed through onto the gums.

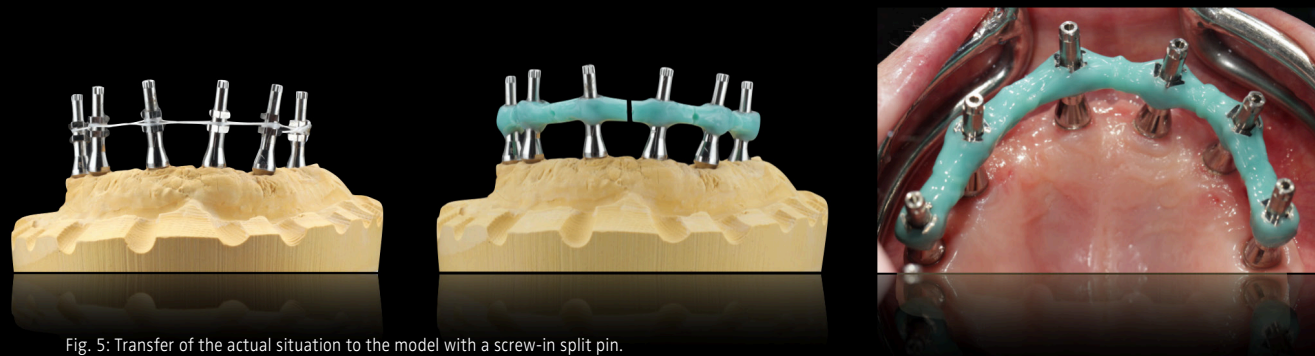


Fig. 5: Transfer of the actual situation to the model with a screw-in split pin.



Fig. 6: Making an individual impression tray.

Digital implementation and sintering of the design:

The final Set-up was made on the basis of the provisional restoration. In this case, the bite position and jaw relation could be adopted directly. The Set-up can be carried out with CAD/CAM support or solely by analog means. This case was solved in the conventional way. Based on the analog Set-up, the Set-up was digitized. The scanned design was reduced by 0.6 mm in the front and then milled from a DD cube ONE® ML blank. The patient receives a partially veneered hybrid restoration on a zirconium framework.



Fig. 7: Digitization of the analog lineup.

Before the sintering process, the zirconium framework was still optimally finished in its raw state and prepared for layering in the anterior region (cut-back). It is important to use the tools intended for this purpose. As a further step before the sintering process, the gingiva was stained with pink liquids. This created a good basis for the subsequent layering.



Fig. 8: Staining of the gingiva part, cut-back in the anterior region with subsequent sintering.

Finish:

In the phase of converting the temporary to the definitive, anything that the patient does not like can still be changed. The temporary restoration is a good basis for discussion. Thanks to the case planning, which was carried out intensively from the beginning, the temporary in this case corresponds almost completely to the patient's ideas; only minimal corrections are made. The patient wanted somewhat more dominant central incisors and somewhat more rounded or feminine shape compared to the provisional.

The central incisors were individually veneered up to the canines, as color and light dynamics play an important role in this area. After the layering process, surface design and shaping and coloring according to the patient's esthetic wishes were started directly. The teeth in the posterior region were finished and implemented using the DD contrast® color and texture system.



Fig. 9: Veneering and surface shaping in the anterior area and individualization of the construction.



Fig. 10: Comparison of layered and stained areas.

By individualizing with DD contrast® in the posterior region, one comes very close to the noble esthetics of a veneer. The intensive DD contrast® colors can be used to characterize the monolithic posterior teeth and create contrasts. The texture pastes help to create a plastic depth effect and, together with the stains, succeed in adapting the posterior teeth so that they form a unit with the veneered crowns. In addition, DD contrast® can be used to create an "airbag" in the occlusal area, which cushions the high masticatory forces and thus has a positive effect on wear behavior.



Fig. 11: Impressions of the completed implant-supported zirconium oxide restoration.

Conclusion:

In the provisional phase, we dealt intensively with the individual wishes, requirements and problems of the patient and only adjusted fine details in the implementation of the definitive restoration. In this way, backward planning played an optimal role in the creation of the dental prosthesis.

From this we conclude: The more intensively one deals with case analysis and planning, the more sources of error can be eliminated on the way to implementation.

Nevertheless, the intermediate stop after the end of the wearing period of the temporary restoration is a good opportunity to compare target and actual data and thus to develop important parameters for the implementation. In my opinion, this successive approach is sensible and necessary on the way to a complete restoration. Only in this way – with great attention to detail and precision – individual works of art can be created for a perfect smile and sense of well-being.



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The temporary made of DD poly X ML – the high-performance polymer

The DD poly X ML – the material for aesthetic long-term temporary restorations up to 12 months and digital denture teeth and bridges for removable teeth-replacement (MDD/MDR Class IIa). DD poly X ML is based on a layer concept that combines the 5 layers in the Selective Injection Compression Moulding (SICM) process, thus ensuring a natural and aesthetic colour gradient. The highly cross-linked polymethyl methacrylate (PMMA) with a reinforced matrix ensures a high molecular weight, giving the material a hardness and abrasion resistance similar to that of the natural tooth itself. Available in 6 VITA® tooth shades.

The definitive restoration made of DD cube ONE® ML – the universal zirconia that combines beauty and stability.

The hybrid microstructure, in which the cubic and tetragonal crystal structures are ideally balanced, combines increased translucency with an increased fracture protection factor and makes DD cube ONE® the multi-indicative solution for highly esthetic fully anatomical or minimally veneered restorations. In the multilayer version, the five main layers are optimally coordinated with each other and ensure homogeneous mixing in the transition layers – this guarantees a smooth shade and translucency progression in the layers. With the precise reduction of additives from incisal to cervical by the Multi Additive Technology®, the perfect interaction of color and translucency is achieved. Available in all 16-VITA® tooth shades.



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