Fulfilling a patient's dream - but how?

By Wolfgang Bade

Translated by Chris Müller

"Patient, dentist and technician must form a clear picture of the final outcome early in the process. All involved should be able to visualize the proposed end result..."

The headline leads straight to the next question: "How can we cater for and satisfy our patient's expectations long before the day of issue?"

Patient, dentist and technician must form a clear picture of the final outcome early in the process. All involved should be able to visualize the proposed end result even before actual work begins.

At the preliminary planning stage, we work out via the diagnostic wax-up/set-up what the patient's wishes are and how these can best be achieved. At that point, having relatively little money spent, the patient gets a fairly realistic picture of the proposed outcome. Sometimes there may be a change of plan at this point.

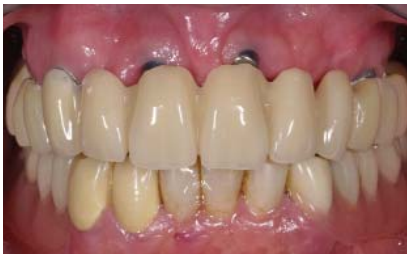
Once the green light is given, preparations are made and impressions taken. A final wax-up on the master model is then created for aesthetic fine tuning and final bite check. This wax-up is transformed into a long-term temporary or what we call an "interim travelling restoration".

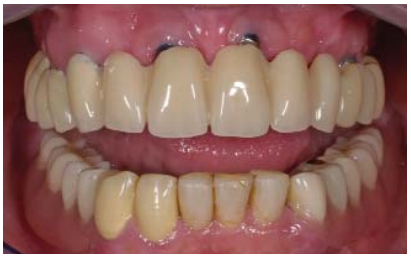
This allows the patient time to get accustomed to the proposed dimensions and look of the final restoration. In doing so, they get a good understanding of 'what is coming'. The final bite established can easily be replicated in the master mount even in case of orthodontic joint manipulations. Sometimes two sets of temps are made to keep one spare while the other is being worked on.

Experience tells us how difficult it is to evaluate all parameters involved during the relatively short chair side try in, because every angle observed can only be a 'snapshot' of the patient perpetually in motion. For this reason we always take a series of photographs at the try-in stage for later observation without time constraint. Without fail, we'll pick up a range of small changes needed to perfect incisal lengths, axes or shapes which escaped our attention when we were face to face with the patient.

Even if you don't have a professional camera set-up, a pocket camera will suffice for this. With the long-term temp in place, we then let the patient do the testing. Aesthetic appearance and comfort need to be proven first in the action of everyday life. The temporary restoration can be altered any time to suit requirements. Sometimes we produce a completely new temp until all involved are satisfied. By the way, physical distance between lab and surgery won't influence the outcome.

When the patient gives the go-ahead for the next step, the parameters of the refined temporary bridge are duplicated precisely in the milling template and everyone already knows we are on a winner!





Figures 1 and 2. The long-term temporary bridge provides clues to abutment positioning on the centrals.

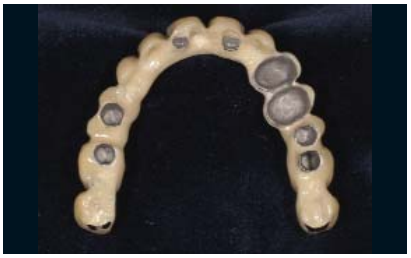
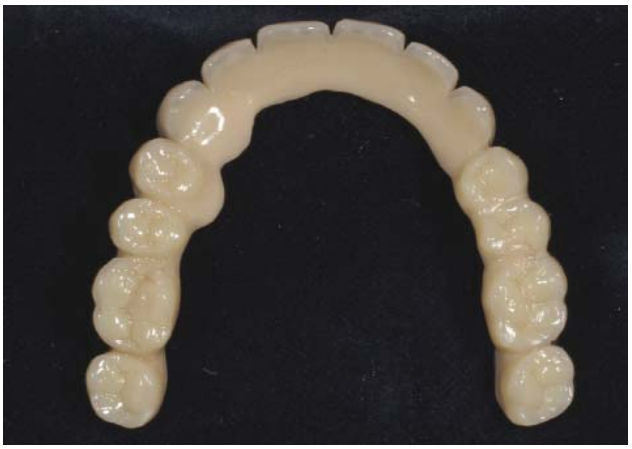
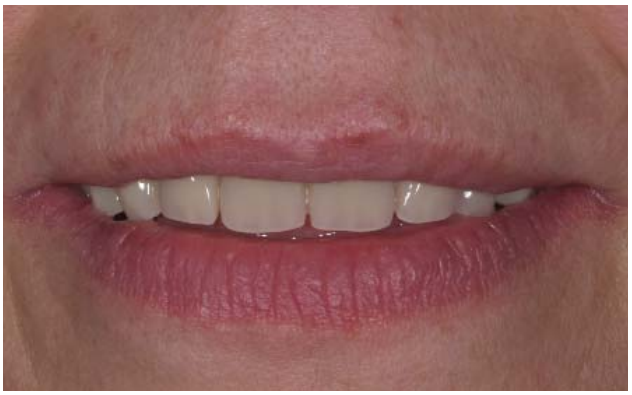


Figure 3. Metal reinforced frame is designed to rest on the anterior gingiva formers.





Figures 4a and 4b (Left and above). The "interim travelling restoration" hints at the end result.

Figure 5. The milled frame at the "green" stage.

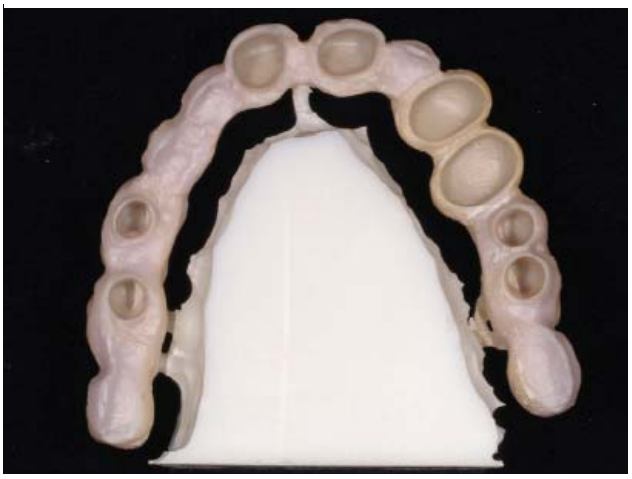


Figure 6. The coloured and sintered frame with centre support base still attached to ensure a tension-free sintered result.

This way we avoid having to sell our product 'a second time over' as often happens when a restoration doesn't meet a patient's expectation on the final visit. Who hasn't been trapped in a situation of excuses "why this, that or the other wasn't possible". Considering the sums involved, patient and dentist have a right to perfection.

I would like to present a particular case with implants already placed and impressions taken, though, the basic idea is always the same.

Case report

The patient presented with primary telescopic crowns on teeth 13 and 14 which they refused to part with; two implants in the area of tooth 16 and implants for both upper centrals (11 and 21) and teeth 24 and 25. A long-term temporary bridge was made on these abutments to see how the patient would cope aesthetically and to check overall function and comfort (Figure 1).

The temporary bridge would also provide clues to custom abutment positioning on the centrals (Figure 2). The metal reinforced frame rests on the anterior gingiva formers (Figure 3) and the "interim travelling restoration" hints at the end result (Figure 4).

While everyone was pleased with the chair side try-in, we noticed some finer points needed to be rectified when we evaluated our photographs. The canines appeared a touch long while the centrals required some extra length. Dentist and patient agreed, so we made the relevant changes. As you can see, this approach allows maximum flexibility.

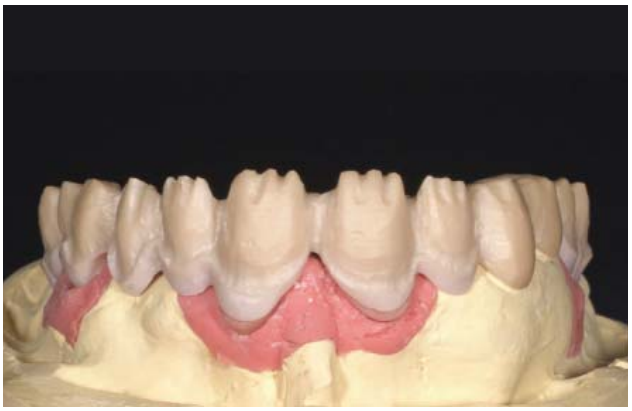


Figure 7. The dimensions of the sintered frame allow an even layer thickness for veneer porcelain all-round so as to prevent chipping.

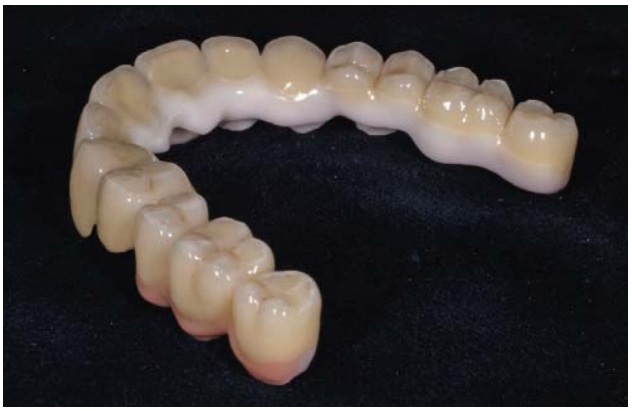


Figure 8. All out-of-view sections are reinforced thoroughly with zirconia to increase strength.

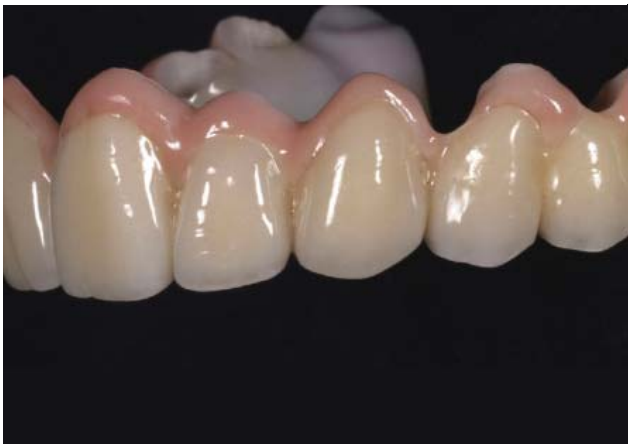


Figure 9. Patients nowadays prefer "red and white" aesthetics so teeth "long in the neck" are out.

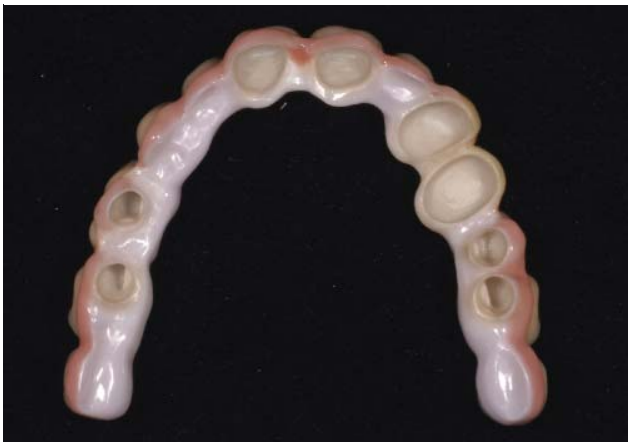


Figure 10. The tissue fitting surface is always solid zirconia because it is much denser than veneer porcelain.

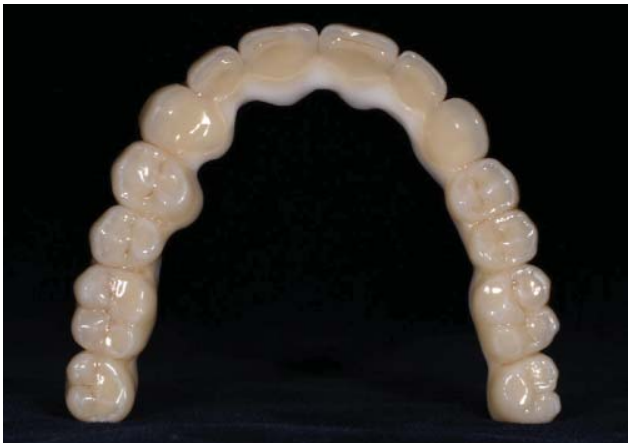


Figure 11. The strength of the frame is well camouflaged by the veneer ceramic thanks to pre-sinter dentin and tissue colouring together with convincing translucency.

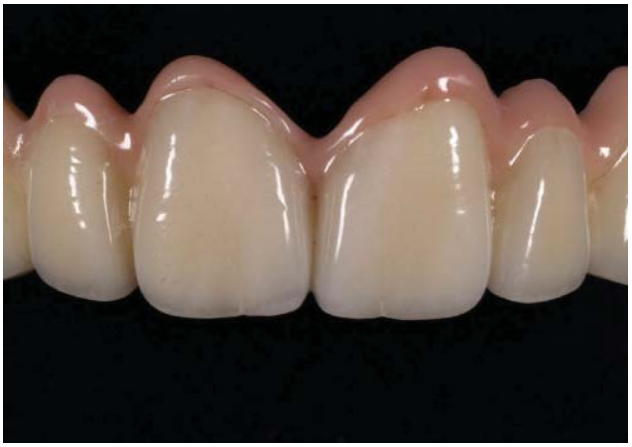


Figure 12. The completed restoration.

Once exact tooth position, angles and lengths are established, we can produce the custom abutments. The four abutments carrying the temporary bridge stay with the latter and we make a set of new abutments to go with the final restoration.

This ensures the patient always has a complete functioning spare set of teeth at hand for future reference in case a service has to be carried out to the original.

This may sounds like a lot of work, but 80% of it is carried out in the lab. Handling for the dentist is made easy and the patient always feels well cared for.

We use the long-term temp to remount the upper model in the established final vertical dimension.

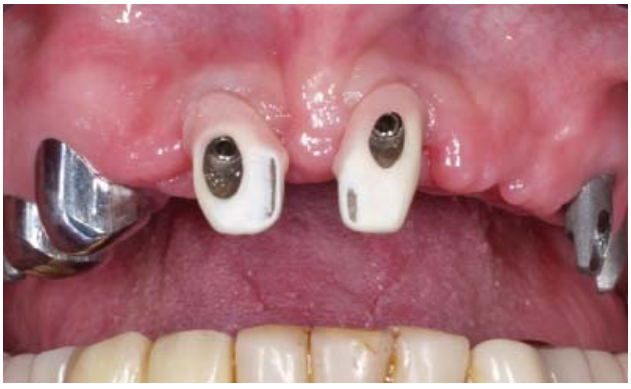


Figure 13. Cast custom abutments were produced for the centrals with the emergence profile veneered with pink porcelain and the remainder covered with opaque.

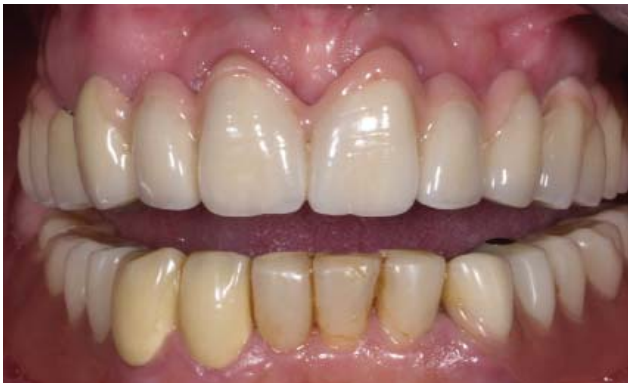
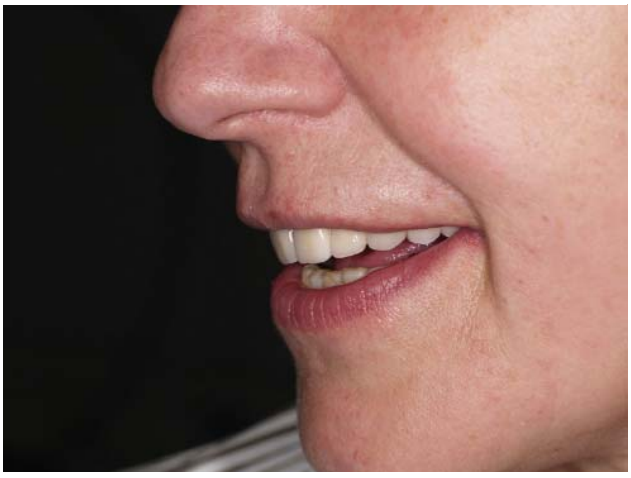
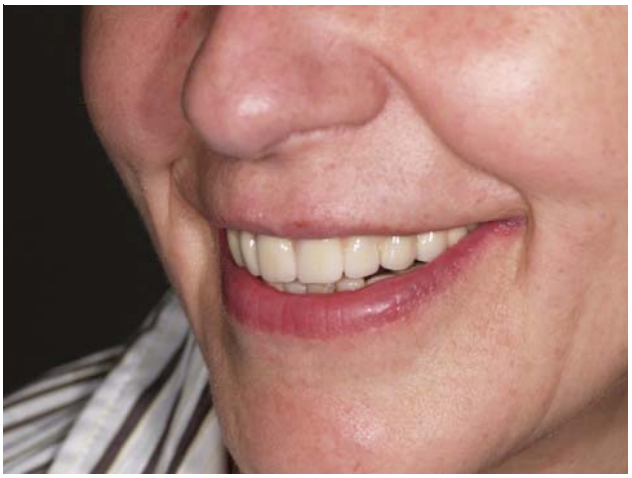


Figure 14. The bridge held in situ with temporary cement after 2 months.





Figures 15 and 16. A worthwhile team effort and the most important piece of jewellery money can buy!

Figure 5 shows the milled frame at the "green" stage and Figure 6 shows the coloured and sintered frame. Note the centre support base is still attached to ensure a tension-free sintered result.

When working with zirconia, it is imperative to have a good understanding of the frame's dimensions and extensions in order to create adequate veneer porcelain support all-round with even layer thickness (Figure 7). By doing so, porcelain chipping poses no threat and the longevity of the restoration is prolonged. Veneer porcelain support is even more important with zirconia restorations compared to PFMs.

Strength is the first priority and all out-of-view sections are reinforced thoroughly with zirconia (Figure 8). Patients nowadays also seem to prefer "red and white" aesthetics so teeth "long in the neck" are out (Figure 9).

The tissue fitting surface is always solid zirconia because it is much denser than veneer porcelain (Figure 10). The tissue fitting contour is designed according to the dentist's prescription. Saddle-shaped pontics show good results, however medical opinion varies on this technique.

Solid, though aesthetically pleasing at the same time, the strength of the frame is well camouflaged by the veneer ceramic thanks to pre-sinter dentin and tissue colouring together with convincing translucency (Figures 11 and 12).

Because the implant angles of the centrals are pointing straight into labial air space, we had to produce cast custom abutments. The emergence profile was veneered with pink porcelain and the remainder covered with opaque (Figure 13).

Figures 14-16 shows the bridge held in situ with temporary cement after 2 months.

We are passionate technicians on one hand, but on the other we strive above all to keep in mind the needs and desires of patient and dentist. Their wishes are our challenges and guide lines for our solutions.

Technical note

The zirconia framework used in this article was produced using the Zirkonzahn zirkograph.

About the author

Wolfgang Bade is a dental technician and proprietor of Bade Zahntechnik in Schwerin, Germany. For more info, see www.bade-zahntechnik.de.