

Ten Daily Challenges for Dental Technicians

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Clear, honest and intelligent communication between dentists and dental technicians is key to diminish the daily challenges that the latter faces especially when it comes to understanding the variables involved in the prosthetic lab phase.

Below I will discuss 10 challenges we as dental technicians face and the reasoning behind them:

- **A complex single anterior crown:**
The single anterior crown is the most difficult crown to do, as it must be done in a way that it cannot be recognized (emergence profile, shade and shape).
- **A Prosthodontist-Dental Specialist**
It is usually more stressful when a case is received from a dentist who understands the materials and the lab work in detail. For example Dr. Sebastian Saba, a client, is a well known Prosthodontist, well versed in the clinical and laboratory literature and expects a lot from his technical support due to his challenging clinical case demand.
- **Metal free crown with a dark root core.**
In general, we wish for preparations not to have any metal posts or any dark discoloration and to have natural dentin shade which will help us choose any metal free product. (Fig.1)
- **Choosing the right zirconia blank (Opaque or translucent and HT).**
Since we have a dark preparation and a dark adjacent tooth, we chose a medium translucent zirconia to mimic the adjacent tooth. If the adjacent tooth was lighter then an opaque zirconia would have been chosen.
- **Choosing the right porcelain.**
We need to choose a ceramic with high bond strength, low shrinkage, stable shade and shape after multi-firing, easy to handle, giving us many choices of different types of kits which enables us to achieve a beautiful natural shade. For these reasons I choose to work with the CeraMotion ceramic System from Dentaureum.
- **Receiving 25 pre-op pictures by email.**
The need to receive multiple pictures with different shade guides that would help you determine the proper shade. (Fig.2) The need to get an appreciation of the patient is critical.
- **Testing your hypothesis, milling two crowns.**
Because of the situation: dark preparation, dark adjacent tooth, metal free crown, and unpredictable expectations, I opt to mill 2 crowns with the same medium translucent zirconia but with different way of ceramic layering.

- **Soft Tissue Margin.**

The Gingival level is always an issue with anterior cases. Margin location, emergence profile, tooth contour, tissue symmetry will influence tissue stability and esthetics.

- **Width of Restoration**

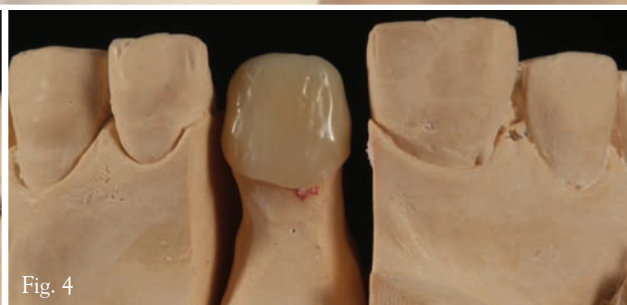
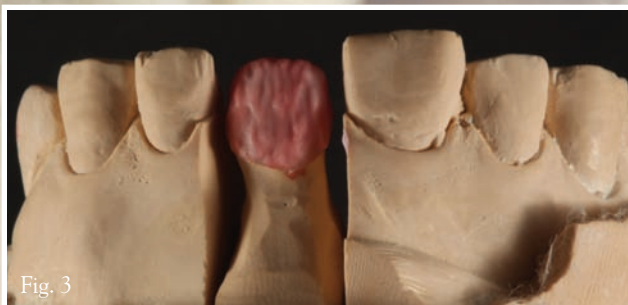
If the space for the restoration is not symmetrical with the contralateral tooth; therefore we must create an illusion by moving the line angles, axis and corners.

- **Multiple colors.**

I believe that a natural shade may be achieved by multiple ceramic layers, internal stains and by mixing shades. By doing so several firings are required. For this reason we must have the right ceramic which is stable and keeps its shade and shape.

How do we proceed?

1. Upon reviewing the pictures sent by the dentist and comparing the shade guide sticks with the natural teeth and having a very good



knowledge of the material I use (CeraMotion) which allows me to visualize how to build up my crown. How many layers to build and which Zirconia is suitable to achieve a very natural looking tooth.

2. By referring to the CeraMotion 3d chart I decided that the shade should be between D3 and A3.5. For the Zirconia infrastructure I chose a Medium translucency Zirconia that I tinted it with the D3 shade as a base color.

3. 2 ways to apply the first layer of ceramic.(Fig.3-4)

1. Either by applying a thin layer of fluorescent liner at 800 (which is 50 C higher than the baking temperature). OR
2. By applying a thin layer of dentin , 0.3mm to 0.4mm all over and bake it at 780 C, 30 C higher than baking temperature as a connective layer firing.

4. Experience and imagination help a lot in starting your build up. I also believe that to control the shade and the position of your Dentine inside your crown and by comparing it to the photo's of the adjacent tooth, you can foresee how many bakes you will require to achieve an exact shade. The first bake in this case is only dentine D3 with some irregularities, to have the light diffuse through it like a natural tooth. (Fig.5-6)

5. After baking the dentin and being sure about its position, length, width, etc. . I made an incisal bake alone to control as well. I didn't start adding effects or translucence yet. In the same bake I added a thin layer cervically of the DMC orange to give the A3.5 effect. With this bake I repeat the irregularities in positioning these 2 powders as you can see in these pictures. (Fig. 7-8)

6. I cover the whole area with BD

B1 and bake it. By looking closely at the natural tooth, you notice it is white opaque. By applying this material I limit the translucent area from the whitish looking area and I apply it more distally. (Fig. 9-10) after the bake I smooth it and make it a little thinner in some areas.

7. Now we can start finalizing the shape by using translucent incisal, incisors and opal effect materials. Closing the proximal areas, going up to the incisal edge building it slightly longer with Incisal Translucent IT 2 (Fig. 11), covering the cervical and middle area with a thin layer of BD D2 which will give it a more grayish color and more chroma. Proceeded with the Dentin program bake. (Fig. 12)

8. Cutting it back in a few areas to give more effects and to imitate the internal effect not only by using stains but also modifiers and different opal materials. So by

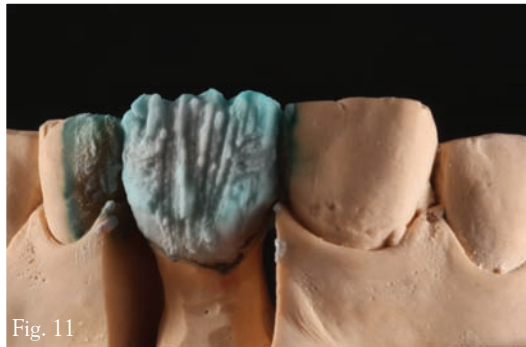
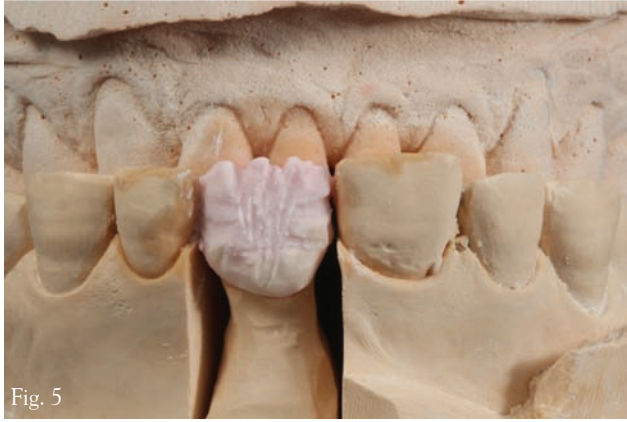




Fig. 14



Fig. 15



Fig. 16



Fig. 17

The ceraMotion® moment.

The Veneering ceramic ceraMotion®_{Zr} for zirconia and lithium disilicate.



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Bassam Haddad, CDT



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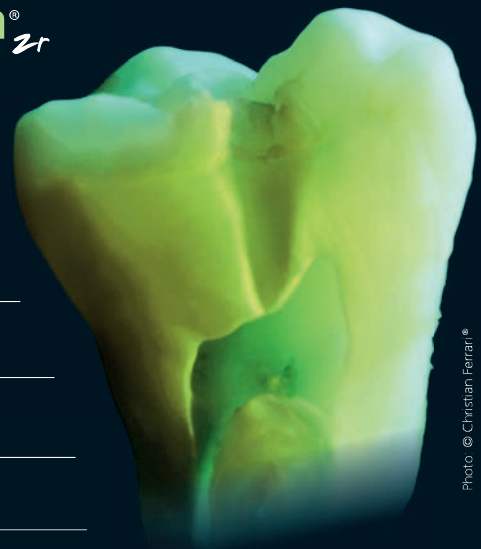


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Fig. 18



Fig. 19

deciding to cut back in very small areas and add for the final touch IM Opal honey on the middle incisal edge and surrounding this with IM opal white and finalizing the proximal areas with IM opal blue then make the final bake. (Fig. 13-14-15)

9. Usually this final bake doesn't take much time to adjust for positioning and shape. At this stage we spend time creating the final texture by comparing it to the adjacent tooth. By using different types of texture powders it helps you to see fine details and by using different carbides, stones and diamond burs and sometooth drawings until it looks exactly like the adjacent tooth.
10. Glazing stage, by using glazing paste from CeraMotion and by smoothing between the lobes with a rubber polisher and adding Universal stains from CeraMotion. The most beautiful thing with this material is that after the connecting layer all the steps are at the same temperature 750C without any changes in the shade and shape. (Fig 16-17)



Fig. 20

11. (Fig. 18-19-20) when going to the dentist with the final artwork, with 2 crowns to choose from....and you notice that the dentist can't choose which one, is the greatest feeling! Why you may ask?... By choosing the right materials the 10 reasons to have a rough day becomes 10 reasons to have a great day. In conclusion by visualizing the finished product and utilizing the layering and mixing technique as well as using the stain liquid in between each layer to verify the shade it will allow you to achieve your artwork. Experience and choosing the right materials will make your life much easier. ❏

About The Author



Bassam Haddad, CDT
Bassam Haddad is a dental technician for 26 years. He acquired a comprehensive knowledge in various systems of dental technology with the greatest masters of dental art in the world. He is the author of several local and international articles on aesthetic and restorative dentistry.

He is known to give passionate hands on courses where he shares his knowledge, own techniques and discoveries to manipulate ceramic and other materials for a natural and aesthetic result. He is, as well, lecturer in many conferences and dental meetings in North America.

Bassam Haddad holds VIVACLAIR CANADA dental laboratory in Montreal.