

Introduction

A 60 year old gentleman presented needing treatment involving endodontics and a crown. In order to provide him with a good color match, the author used a chart designed for that purpose. It asks for information such as the patient's age, sex and internal color or stump shade (relating to material selection). All of this will go into consideration for the final restoration's color and was developed by the author to aid in the process, both for the technician and the dentist.

When choosing material for the type of restoration we will discuss, dental technicians prefer either lithium disilicate or zirconia as their options nowadays. With a dark stump color such as this gentleman's the author always chooses zirconia because it easily blocks the internal color causing no interference with the external shading.

This descriptive coloration chart ensures color mapping from the gingival 1/3 and mesial-incisal 1/3 - both horizontally and vertically - to better relate to that particular color area. The technician can consider layering the colors together – using his own expression to create his particular porcelain system.

However, the traditional shade tabs that we have used in the past don't really accurately describe what we are seeing within a patient's dentition, in the author's opinion. He uses his own porcelain shade tabs to better create and design his patient's color for the mesial-distal and incisal 1/3 areas. He also discusses with the patient exactly what his preferences are and the particulars about his teeth. Is there any composite bonding? Where? And are there any future plans for the patient's dentition? Should we match the current color or try to change/improve it? What are the goals associated with this particular case?

The author also looks at the tissue and tooth design – convex/concave? What about surface texture and lobe design? On which areas are we focused? Using photographs and this guideline, the author is able to move forward with his plan for the case and figure out what the final product will look like.

For this case in point, he will illustrate how he set about implementing his plan for this patient.

Case Study

In (fig 1) we are given a view of the nearly black post and core which will have to be masked. The best option for this cover is zirconia, in the author's opinion, as discussed above. He noted that the area between teeth numbers 8 and 9 is concave – basically a black hole. Composite on the incisal/mesial corner of central number 8 would have to be mimicked somewhat on the adjacent restoration, as well. A grayish/pink color was noted in the body-middle 1/3 area with an orange crack line.

The Custom Shade Chart with all of the patient's information noted on it would be utilized for a final QC check when the restoration was finished (fig 2). During custom shading, author -Laboratory fabricated custom shade tabs made from ceramic porcelain make the dentin/mamelon/enamel color choices simple to select because they are each included in one shade tab (fig 3). A facial view of the zirconia copings with an A1 base, on the model (fig 4)- with incisal height noted - gave the author information about his next step. In comparison to teeth numbers 7 and 8, the facial view would need reduction and multi – layering of the porcelain to allow for an even flow of size, color, shape and contour (fig 5). GC Initial Dentin with a C2 base (fig 6) was applied, after which translucency modifier #5, grey in color, was applied horizontally toward the mesial area. The turquoise color indicated in this image denotes enamel opal #4 – light blue and grey – spread out in the incisal 1/3. With a pointed brush, the author applied three layers of porcelain – gray, subtle white and blue (fig 7). Next, after firing at 810°C, fit and interproximal contact was checked on the model (fig 8). The author was then able to create surface texture and shape (fig 9). After glazing, on the solid cast model, we can see the gingival grey/orange tone. The body section is whiter in tone toward the incisal area with orange/brown covering all outer sections along with a transparency layered over the top (fig 10). Our mirrored image in (fig 11) is worth a thousand words with the view it provides of the completed restorations. We can differentiate shading, tones, exaggeration of the centrals' color and the laterals' lighter shading. This natural beauty is derived from the many color tones the author used to create harmony and esthetics.

In (fig 12), number 9 was tried in and a shot taken to verify color. The composite in tooth number nine's

incisal edge was mimicked slightly. In (fig 13), both were inserted as a try-in, with an upside down shot taken (fig 14) to provide an occlusion view at a different angle. Our patient's smile view in (fig 15) illustrates the near perfect match the author was able to fabricate.

Conclusion

As dental technicians, we are working with shade tabs and a photo when we match a patient's unique color. Most of the time, we forget to ask about the patient's lifestyle in addition to checking his custom shade. But such things as wine, coffee, smoking – all can have an effect on the patient's dentition coloration. With a 2 or 3 unit case, the color can appear to be slightly different but with the same characteristics and modification as well as tone. Staining and shape play a role in the final restorations, as well, and need to be considered. We will always try to mimic the natural color we see in the patient's dentition but also have to consider their financial situation and what they are able to afford when we are considering the case. In other words, we need to put all these pieces together, document their existence, study the photos we take and communicate with the patient about what he is hoping to achieve. This is the key to our success! And once it's accomplished, we can feel good about our efforts-especially when the patient feels so much better about what we have done for his smile.

Acknowledgement

Case courtesy of Rick Alwan, D.D.S., Naperville, Illinois.



Fig 1) Post and core

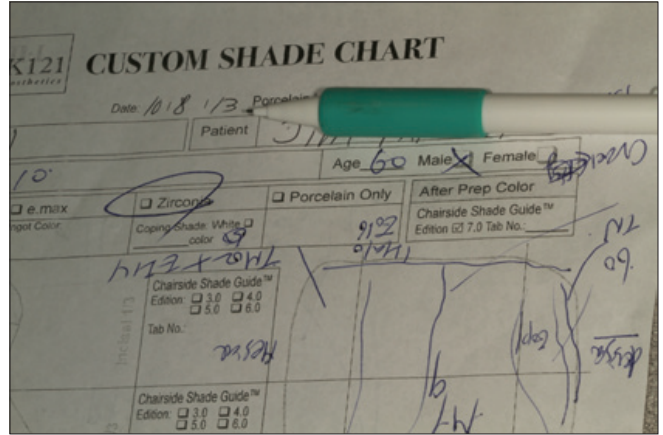


Fig 2) Custom shade chart



Fig 3) Porcelain custom shade tabs

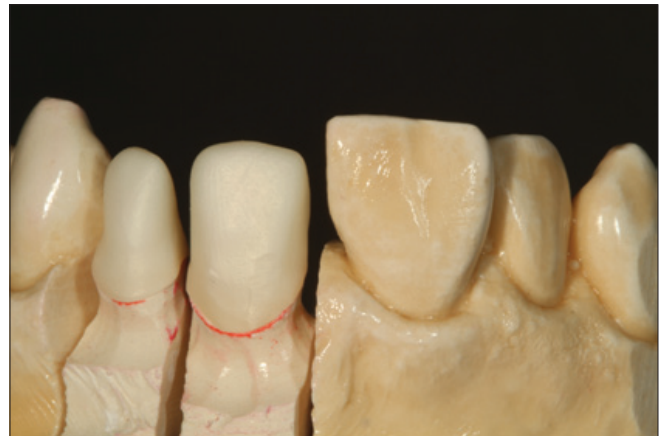


Fig 4) Zirconia coping with A1 base

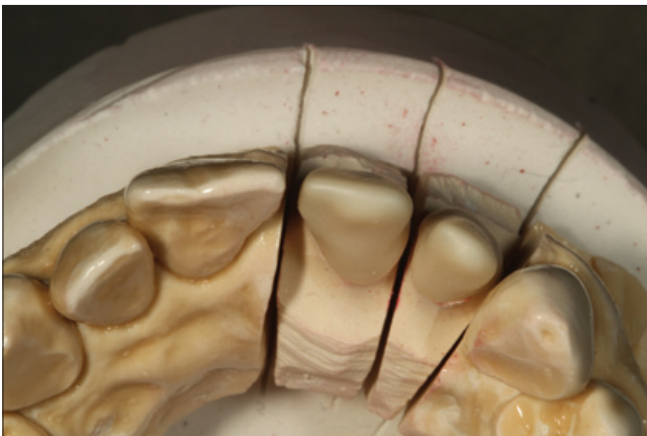


Fig 5) Facial view

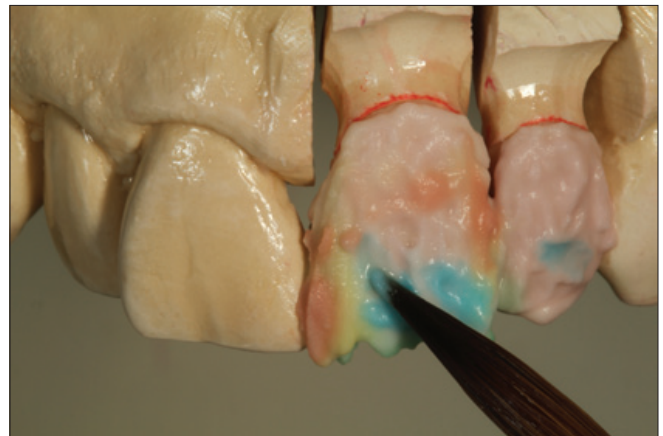


Fig 6) Dentin application

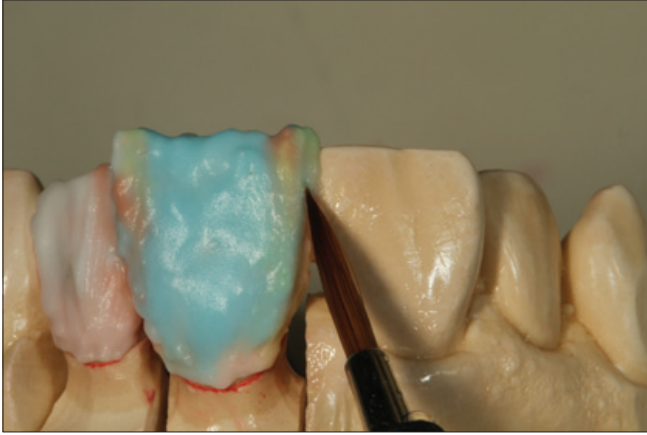


Fig 7) Brush application



Fig 8) After fire



Fig 9) Create surface texture and shape



Fig 10) After glazing



Fig 11) Mirrored image



Fig 12) Try-in number 9



Fig 13) Insertion



Fig 14) Occlusion view



Fig 15) Smile view