

The Predictability, Beauty and Ease of Pressable Ceramics

By Brad Jones



Image 1



Image 2

As our patients' expectations continue to rise it becomes profoundly important to use techniques that deliver beautiful — and predictable — results. This article describes in detail my latest layering technique. This technique will not only give you more control over esthetic predictability but it will also help you create restorations that will surpass the expectations of the patient, the doctor and even yourself.

Image 3



Image 4



Image 5



Image 6



Image 7



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This case had several objectives. One objective was to correct the reverse smile line. We would accomplish this by lengthening the incisors. Another objective was to fill the buccal corridors. This would be done by adding to the buccal dimension of the posterior teeth, including crown lengthening on tooth Nos. 12 and 13 and replacing tooth No. 14, which was missing. Also, we wanted to brighten, refine, and feminize the patient's smile (Images 1-4).

“...it will also help you create restorations that will surpass the expectations of the patient...”

I always start by requiring all the tools necessary to complete the case. This begins with a diagnostic wax-up (Image 5), which will be evaluated from the photographs of the patient's smile in the form of a provisional. I require a complete laboratory esthetic prescription, which includes:

- The goals of the final case.
- A checklist of the items included with the case.
- Teeth to be restored.
- Type of restoration desired.
- Preparation shade.
- Detailed shade mapping.
- Type of light source used to take the shade.
- Shape desired.
- Crown lengths (centrals, laterals, canines).
- The amount and color of the incisal translucency.
- Surface texture.
- Any other essential miscellaneous information.



Image 8



Image 9

Image 10



Image 11



Image 12



The items that must be included with the case are:

- One or more master impression.
- Opposing impression.
- Preoperative models.
- Diagnostic wax-up.
- Bite records.
- Transfer jig.
- Model or impression of the approved provisionals.

Equally important are photographs of the preoperative smile (the 12 standard AACD views), an eyebrow-to-chin photo of stick-bite, an eyebrow-to-chin and a 1:2 photo of the natural smile with approved provisionals taken a couple of days after the preparation appointment (**Images 6-7**).

Waxing and Pressing

A silicone putty matrix was formed over the model of the provisional (**Images 8**). You want to make any corrections to the provisional model before making the matrix, if necessary. Then quickly placed in a pressure chamber at 60 psi for perfect adaptation (**Image 9**). This matrix was then placed over the lubricated dies and wax was injected into it (**Images 10-12**).

The temperature of the wax in the wax injector needs to be very low. The wax should come out of the tip at the consistency of toothpaste. This injection process perfectly reproduced the patient's provisionals on the working model. Using a jeweler's wax injector not only saves up to seven hours of hand waxing, but helps maintain the exact lengths, positions and tooth forms of the provisionals which the patient, the doctor, and I had approved. This is where the predictability comes in through accurate matrices and wax injecting. After the wax had cooled, I carefully removed the matrix (**Image 13**).

After finalizing the wax up, I separated the wax units using an Ultra Thin Tanaka Knife (Tanaka USA). Then I sealed the margins being sure not to disturb the interproximal detail, which closes the black triangles. I invested the wax units in Microstar HS Investment (Mircostar, Corp.) with a slight modification in the liquid to water ratio: 15 ml liquid, 10 ml water per 100g of investment powder.

Materials Selection

In selecting a ceramic material I first looked at the color of the preparations. Our patient had perfectly light-colored stumps (stump shade No. 9) with which to work (**Image 14**).

I prefer Authentic pressable ceramic (Jensen Industries). This system has ingots available in all the different shades in three different values (a '++' is an ingot equivalent to an opacous dentin, a '+' ingot is equivalent to a dentin material and an ingot without a '+' is equivalent to an enamel). For any given shade, there is an appropriate ingot based on tooth reduction.

For instance, if I were to make a veneer for a minimally reduced tooth (.5mm) I would select an ingot without a '+' because we are just replacing enamel. For a 1 mm reduction veneer, three quarter crown or even a full all-porcelain crown I would select an ingot with a '+'. Lastly, if we were taking off an old porcelain-fused-to-metal restoration (particularly if we are dealing with some dark dentin), I would select a '++' ingot.

In this case, my target shade was a bleach shade of O20. To achieve this, I selected a B00+ ingot. This ingot has just enough chroma to hit an O20 and has just enough opacity to still look vital in the mouth while filtering differences in thickness.



Image 13



Image 14



Image 15

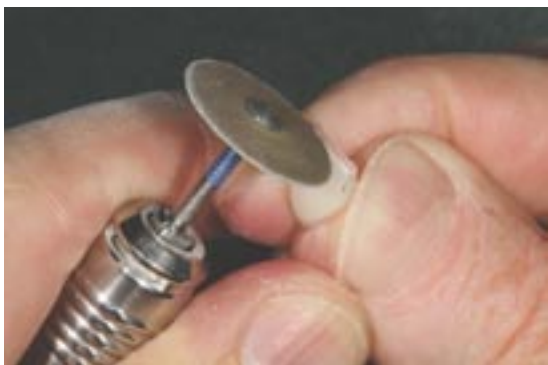


Image 16

Image 18



Image 17

Image 19



Image 20



Image 21



Image 22



Image 24



Cutback and Layer

After divesting and fitting each unit, I was ready to do my new technique. I outlined the facial and lingual edge of the incisal edge with a red pencil. I then took a .3mm lead pencil and marked a line a half millimeter in from the facial incisal edge. Using a contour stone (Brasseler USA), I beveled this incisal facial area back to the pencil line (**Image 15**). To preserve my halo, I remarked the incisal facial perimeter with a red pencil. Then I created a ditch using a knife edged diamond impregnated disk (Komet USA) not only across the incisal edge, but also in the incisal mesial and distal edge paying strict attention not to disturb the red pencil line (**Image 16**). I smoothed out this ditch apically (away from the halo) with the contour stone and then with a tapered diamond bur to create a canvas (**Image 17-18**).

Using grey (low value) and vanilla (high value) universal stain (Ivoclar Vivadent), I started to create the internal effects (**Image 19**). After the effects had been baked at 765°, I used Authentic pearl porcelain for the internal lobe structures, which I brushed out to create a feathery cloud-like appearance. I used intensive opacious dentin Nos. 4 and 1 (IOD is not so user friendly, but it is well suited for an 020 or brighter shade) to emphasize the halo (**Image 20**). After I evaluated and was happy with my effects (**Image 21**), I was ready to enamel.



Image 23



Image 25

In this case, I decided to segment my enameling by using Authentic powders opal 1 (high value) and opal 2 (low value). However, if you are trying this technique for the first time, I would recommend that you keep it simple and just use opal 2 for enameling. I strategically placed three or four segments of opal 1 (high value). Paying particular attention to my internal effects and building them out exactly half a millimeter from the incisal edge to full incisal facial contour. (Note: initial bevel back was half a millimeter.) I filled in between the high value segments with opal 2 (low value) to complete the shape and contour (**Images 22-23**). It may be necessary because of porcelain shrinkage to touch up your contour with opal 2 in an additional enamel bake.

Shape, Contour, and Glaze

Once I was satisfied with the bisque bake shape and contour, I used a medium sized diamond Komet bur 842R to do the initial smoothing out and perfecting of the shape and contour. Then I used Komet bur 850 to develop anatomy lobe structures and to develop perikymata, also known as growth lines (**Image 24**).

I brushed a thin coat of Authentic 'glaze paste fluor' and glaze medium to a consistency that strings off my brush onto the restorations being careful not to pool the glaze. After I applied the glaze, I placed each restoration on the tray, which was underneath the raised muffle, and fired them at 765° under full vacuum with a one-minute hold time.

I carefully knocked down the glassy look of the glaze using a knife-edged carborandium impregnated white rubber wheel, paying close attention to preserve exactly the amount of perikymata that was desired. To complete the surface reflection, I went over the facial lobe surfaces with a No. 3 ceraglaze knife-edge polisher (Axis Dental) (**Image 25**).

Through the use of a diagnostic wax-up, matrix of the provisionals, a jeweler's wax injector and this simple bevel-back and layering technique, which allows you to develop all of the internal effects to your satisfaction the before burying them in enamels, you will be able to predictably surpass the expectations of the patient and doctor.

I encourage others to proactively seek out the type of patients that will create the kind of niche

Image 26



Image 27



Image 28



Image 29



Rethink Everything:

See AACD Accredited **Brad Jones** as he delivers the keynote address, **Rethink Everything**, at the 2008 FDLA Symposium and Expo on **Friday May 9**.

For more information, see the registration brochure enclosed with this issue of focus.

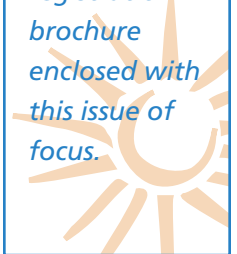


Image 30




that they desire. Once you are in the driver's seat, you can sell the patient, select the doctor you would like to work with and establish the price you want to charge. Also, I encourage others to recognize the profound importance of the use of photography not only to document but also sell your work (Images 26-32). To learn portrait photography, I encourage others to take your patient to a portrait studio that will allow you to use your camera along side the photographer (Images 33-34). 

Image 31-32



Image 33

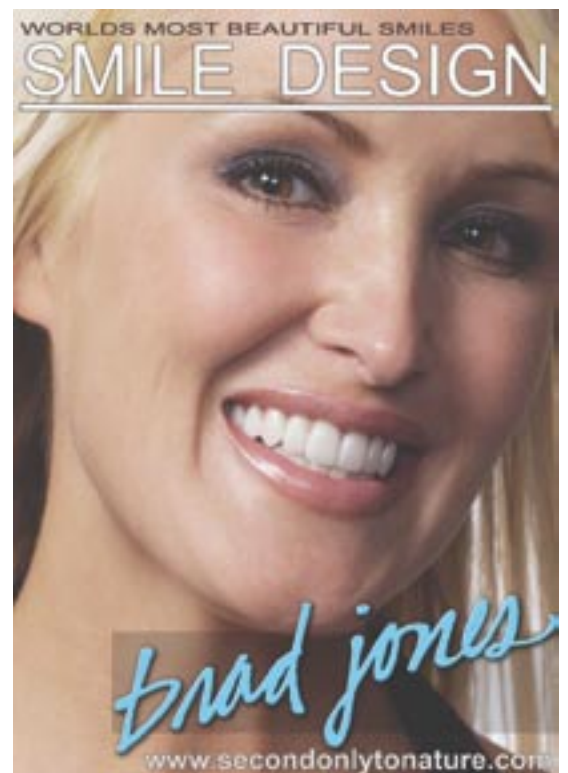


About the Author:



Bradley Jones has achieved full accreditation status with the American Academy of Cosmetic Dentistry (AACD) making him the fourteenth dental ceramist in the world to now hold this honor. He is an accreditation examiner and also serves on the AACD Board of Directors. He lectures nationally on advanced ceramic techniques. Jones co-founded and directs Total Team Advantage (semi-annual live patient seminars) where dentists and technicians are taught smile design together. He has authored many articles on advanced oral design. Jones currently owns and operates a boutique laboratory, Professional Dental Arts, in Boise, Idaho, where his exclusive services range from simple smile design cases to complex, full mouth reconstructions. This gives him the opportunity to create some of the most beautiful smiles in the world.

Image 34



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focus Magazine Article Quiz 2nd Quarter 2008

“The Predictability, Beauty and Ease of Pressable Ceramics”

By: Brad Jones

1. This article focuses on the author’s latest layering technique.
 - a. True
 - b. False
2. Which of the following was not an objective of the case:
 - a. Correct the reverse smile line
 - b. Brighten, refine and feminize patient’s smile
 - c. Replacing crown on tooth Nos.11
 - d. Fill the buccal corridors
3. Which of the following are components are required in laboratory esthetic prescription:
 - a. Goals of the final case
 - b. Teeth to be restored
 - c. Amount and color of the incisal translucency
 - d. All of the above
4. The _____ must be included with the case.
 - a. Opposing impression
 - b. Transfer jig
 - c. Both a and b
 - d. Neither a nor b
5. The temperature of the wax in the wax injector needs to be very high.
 - a. True
 - b. False
6. In selecting a ceramic material _____ is the first thing that should be looked at.
 - a. Color of the preparations
 - b. Bite records
 - c. Size of the preparations
 - d. None of the above
7. In order to preserve the halo, Brad Jones remarked the incisal facial perimeter with a red pencil.
 - a. True
 - b. False
8. At what temperature do the internal effects need to be baked at?
 - a. 345°
 - b. 550°
 - c. 625°
 - d. 765°
9. If you are segmenting enamel for the first time the author recommends using Authentic powders opal 1 and opal 2.
 - a. True
 - b. False
10. Where should you bring a patient to document and sell your work?
 - a. Your laboratory
 - b. Your doctor’s office
 - c. A portrait studio
 - d. All of the above

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