## 'My Biggest Problem Case and How I Solved It'

Technicians make a vital difference in patients' lives and the incredible skills possessed by our community can transform even the most problematic smile. Here's the latest installment of our new series in which industry-leading technicians present a step-by-step look at some of their most challenging cases.

## How to Block Out Understructures When Using Translucent Zirconia

By Jack Marrano, CDT

#### **Technician's Statement**

Zirconia has evolved into the restorative material of choice and recent advancements have resulted in a material that's unsurpassed not only in strength but in esthetics as well, even in monolithic full contour restorations. However, advancements in its translucency and esthetics also mean that modern-day zirconia has lost the ability to stop the bleed-through of underlying structures—such as alloy abutments, dark stumps or even post-and-core buildups—leading to unacceptable discoloration in the final restoration. This case study illustrates how to overcome that challenge.

#### **Restorative Challenge**

The 30-year-old male patient presented with a lost central incisor (#8) and a discolored incisor (#9) previously treated with a cast metal post and core; implant site #8 was integrated and ready to restore. Surrounding dentition exhibited beautiful shade and translucency (see Figures 1-3).

Material selection was crucial because Dr. Chris Barwacz, Associate Professor, University of Iowa, and I wanted a monolithic solution for strength but, at the same time, needed to ensure shade matching while blocking out underlying structure and delivering worldclass esthetics.



#### **Case Study**

We determined that multilayered zirconia was the best choice for the case and chose ArgenZ STML, which is indicated for single-unit and three-unit bridge applications in the anterior or posterior quadrants. Here's my process:

• A Dentsply Atlantis custom abutment was fabricated for implant site #8.

• I scanned the case and designed to full contour in 3Shape's design software *(see Figure 4)*.

• The final design files were sent for milling in a Roland DWX 52DC (see Figure 5).

• After milling, I used Brasseler diamonds, carbides and rubber wheels to finish the pre-sintered zirconia to establish final contour, surface texture and anatomy *(see Figure 6)*.

• Next, I addressed the issue of the underlying custom abutment and metal post and core. This posed one of the greatest challenges of this case and required careful consideration to avoid a poor esthetic result.

• I decided to use a product called White Plus from DMAX essentially, it's a zirconia opaque, and is applied to pre-sintered zirconia (see Figures 7-8). After sintering, the underlying structure whether it's a custom abutment or dark stump—is completely blocked out. White Plus is especially useful with today's zirconia due to the increased translucent properties. • After sintering (see Figure 9),

Continues

#### Figure 1



Before: the patient presented with site #8 integrated and ready to restore.

Figure 2



The esthetic challenge was presented by a post and core on #9 and custom abutment on #8.

#### Figure 3



The patient's natural teeth had a beautiful translucency.





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I made final adjustments and checked the restorations for accuracy on the master cast.

• Once the restorations were verified as accurate, I used a simple stain-and-glaze technique to achieve individual characterization.

#### **Final result**

The final restorations exhibited esthetics and translucency. Using White Plus, I was able to eliminate one of the greatest challenges this case presented: blocking out the underlying structure while not adversely affecting the final look of the restorations (see Figure 10).

#### Figure 4



The case was designed to full contour in 3Shape's design software.

#### Figure 5



ArgenZ STML after milling.

#### Figure 6



After green stage finishing.

#### Figure 7



Before sintering, I applied White Plus (left).

#### Figure 8



White Plus essentially acts as a zirconia opaque (shown after sintering).

#### Figure 9



The restorations post-sintering.

#### Figure 10



The final result after staining and glazing.



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DTI and was Director of Technical Artistry for Lee Culp at Sculpture Studios before joining Absolute.