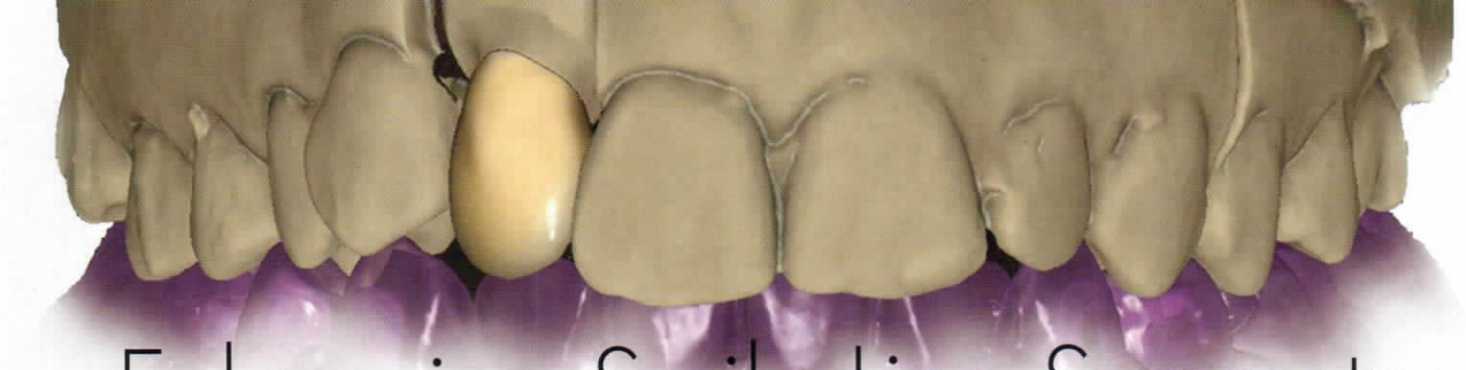

Enhancing Smile Line Symmetry with a Single Polychromatic IPS e.max Multi Anterior Restoration

Daniel Shelton, BA and Roy Krengel, DDS

Introduction

Dentists and their patients are increasingly demanding esthetic restorations that are also durable and strong in order to correct a variety of functional and appearance related problems. Fortunately, the combination of advanced technologies and enhanced materials is enabling dental laboratory technicians to predictably respond to these demands. Among them is an advanced lithium disilicate ingot (IPS e.max Multi, Ivoclar Vivadent, Amherst, NY) that inherently demonstrates progressive chroma and opacity from the cervical to dentin areas, as well as life-like translucency in the incisal region. Additionally, the monolithic restorations fabricated from these ingots demonstrate enhanced fracture resistance compared to other restorative options (i.e., 400 MPa of strength).1

Most significant for laboratories, however, is the manner in which using this ingot contributes to a more efficient and cost-effective daily workflow compared to cut-back and layered ceramic restorations. The IPS e.max Multi ingot can be used to press highly esthetic full-contour monolithic restorations that only require staining and glazing for customization. As a result, the IPS e.max Multi ingot contributes to fabrication simplicity, optimized esthetics, and functional durability.

Case Presentation

A 38-year-old woman presented with a mal-positioned and rotated tooth #7; the tooth also presented with decay. Additionally, the length and shape of tooth #7 was unharmonious compared to teeth #8 and #9 (Figure 1). Following a thorough examination, it was determined that a restoration that would create better tooth alignment and additional tooth length would be required to better complement her smile line.

Preliminary impressions and shades were taken and forwarded to the laboratory (Figure 2). The base shade for the restoration was determined to be A-1, and the high translucency and white decalcification of the patient's teeth was noted. A stone model (Whipmix Resin Rock) was poured and scanned into an Exocad using an Identica white light scanner. As a result, the full-coverage crown restoration for tooth #7 could to be digitally designed (Figure 3) and then milled in wax using a Ceramill Motion 2 (i.e., five axis) (Figure 4).

The wax-up was forwarded to the dentist for the preparation appointment. Tooth #7 was prepared for a lithium disilicate (IPS e.max Multi) crown restoration and then provisionalized. An impression of the provisional was taken after patient approval and sent to the laboratory, along with any additional instructions.

Laboratory Fabrication Technique

The provisional restoration was duplicated in wax, and the alignment, proportions, and contours were developed and verified. An IPS e.max Multi sprue was then attached to the unit, with care taken to enable full use of the entire IPS e.max Multi ingot (Figure 5). This helped to maximize the polychromatic nature of the ingot and, in particular for this case, the translucent portion.

Figure 1: Preoperative retracted view of the patient revealing the short and rotated tooth #7.

Figure 2: Shade A-1 was chosen for the base shade, and the high translucency and white decalcification of the patient's teeth were noted.

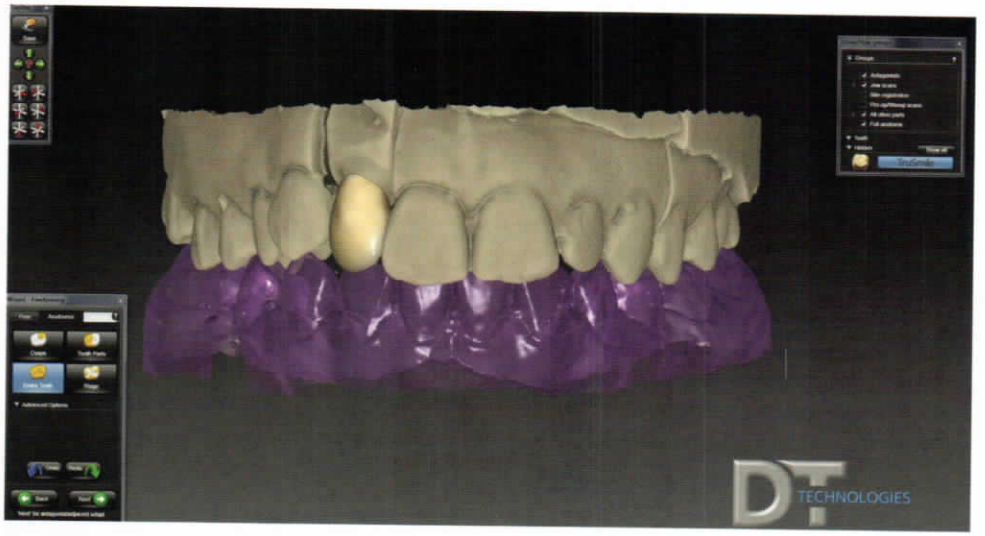

Figure 3: View of the digitally designed full-contour restoration in the Exocad software.

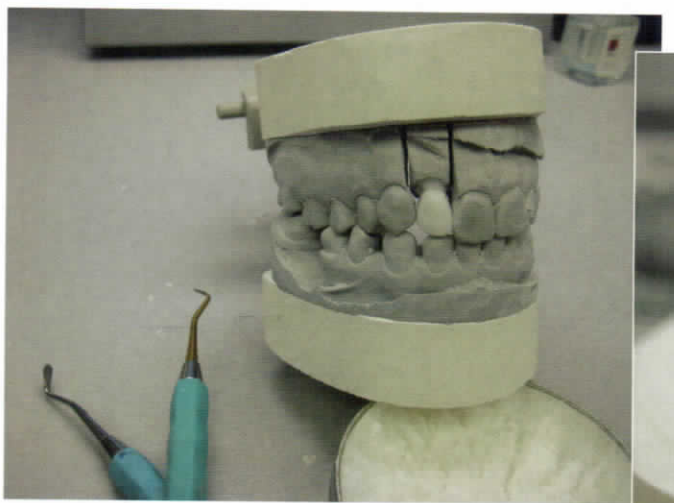

Figure 4: The contours of the milled wax-up were verified on the model.

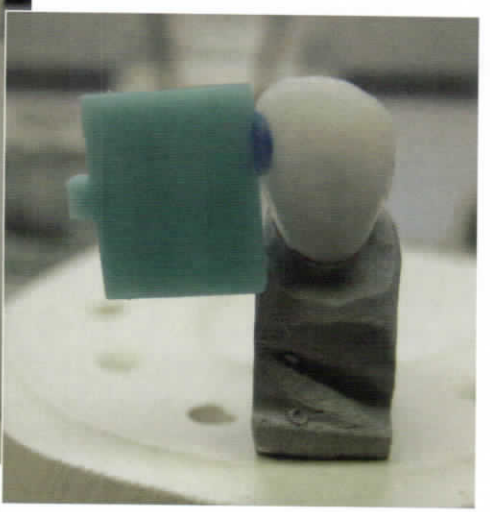

Figure 5: The IPS e.max sprue was centered on the proximal wall.

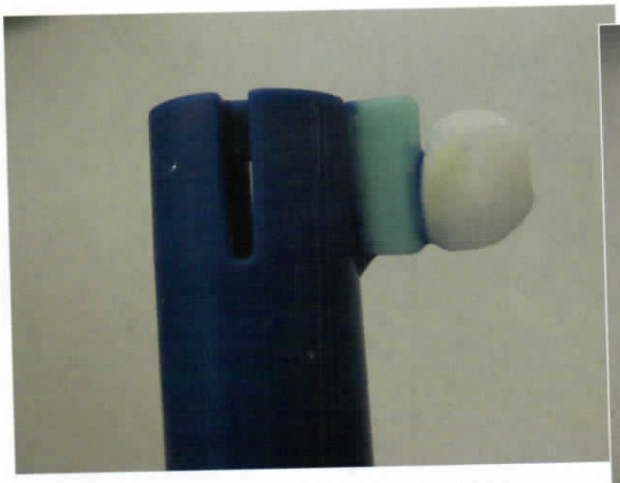

Figure 6: View of the crown on the IPS e.max Multi sprue base.

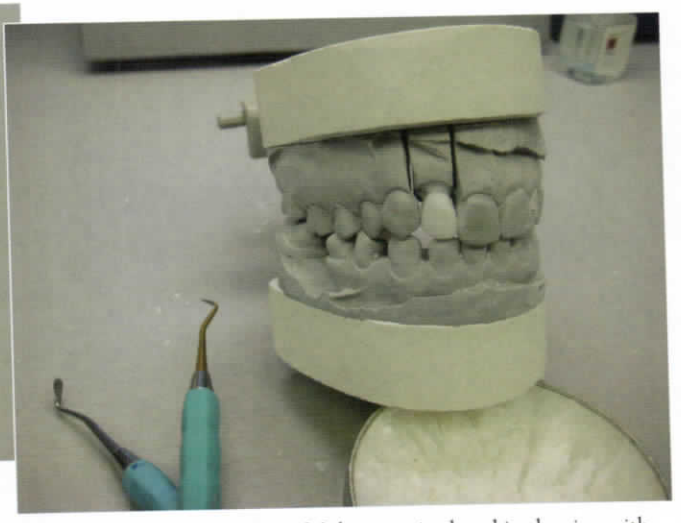

Figure 7: The IPS e.max Press Multi ingot is placed in the ring with the writing facing up.

Figure 8: The sprue was cut off the crown restoration after pressing and divesting.

Figure 9: The final contour, facial anatomy, and characterization was assessed on the model.

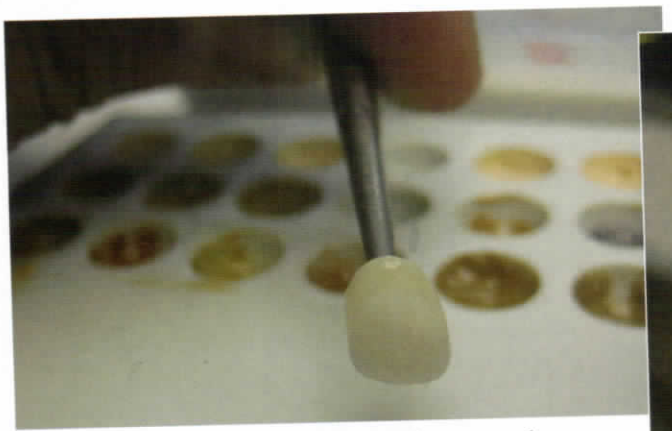

Figure 10: IPS e.max Stains were used to characterize the restoration.

Figure 11: View of the stained crown after firing.

Figure 12: IPS e.max Fluoro Glaze Paste was applied to the restoration.

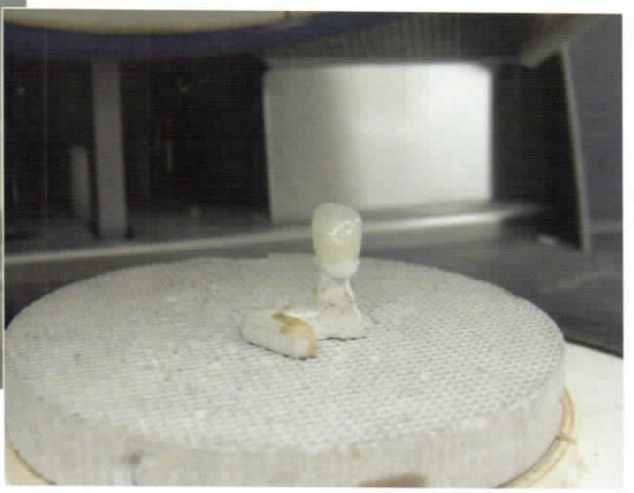

Figure 13: The glazed restoration was fired in Programmat EP 3000.

Then, the sprue was placed on the base former (Figure 6) for investing (Formula 1 Investment), burning out, and pressing (Programat EP 3000, Ivoclar Vivadent). After pressing (Figure 7), the restoration was divested and the sprue removed (Figure 8).

The restoration was seated on the model, and the contour, facial anatomy, and characterization completed (Figure 9). A mixture of stains was applied to achieve the desired effects (Figure 10), and the restoration was fired (Figure 11). Glaze (IPS e.max Fluoro Glaze Paste) was then applied (Figure 12) and fired using the Programmat EP 3000 (Figure 13). After glaze firing, the shade was re-evaluated on the model, as well as contacts and contours (Figures 14 and 15).

The completed IPS e.max Multi full-coverage crown restoration was forwarded to the dentist, where it was first tried in so shade, shape, and length could be evaluated by the patient. After receiving patient approval, the restoration was definitively cemented (Figures 16 & 17).

Conclusion

IPS e.max Multi is ideal for the anterior single unit restorations required in daily practice. As demonstrated in this case, an esthetic restoration that intrinsically demonstrated the ideal

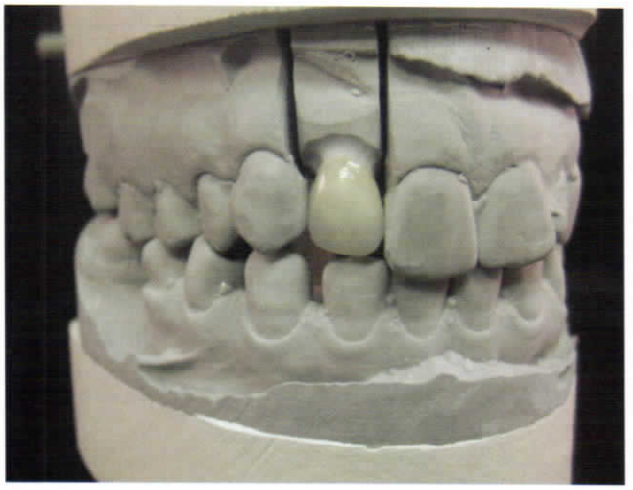

Figure 14: View of the glazed crown on the model after final assessment.

Figure 15: View of the finished crown on the tissue model.

Figure 16: Postoperative right lateral view of the IPS e.max Multi full-coverage crown restoration on tooth #7.

Figure 17: Postoperative front view demonstrating the enhanced shade matching and alignment of tooth #7, which enhanced the patient's smile line.

progressive optical properties was easily and efficiently fabricated. The desired characterization could be completed with only stains and glazes, eliminating the need for time-consuming cut-back and layering techniques. SD

• References

Altamimi AM, Tripodakis AP, Eliades G, Hirayama H. Comparison of fracture resistance and fracture characterization of bilayered zirconia/fluorapatite and monolithic lithium disilicate all ceramic crowns. Int J Esthet Dent. 2014 Spring; 9(1): 98-110.

About The Authors

Daniel Shelton *graduated from the University of St. Thomas in 2001 with a BA in Operations Management. Focusing on crown and bridge fabrication and ceramics, he has been in the laboratory industry for 10 years, and his experience working in a full-service laboratory provided the broad knowledge base he incorporated into Shelton Dental Studio. Daniel is currently working toward Recognized Specialist Certification at the Kois Center for Excellence.*

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